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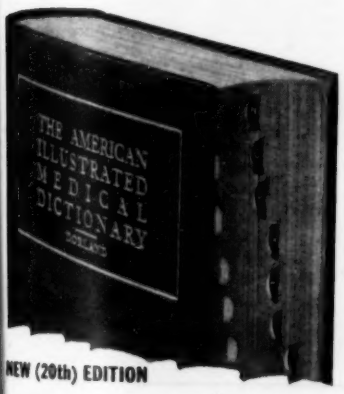

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PERLÈCHE: ITS NOSOLOGIC STATUS

CHAIRMAN'S ADDRESS

CLARK W. FINNERUD, M.D.

CHICAGO

The term perlèche, until recently employed solely in the vocabulary of dermatology, has assumed popular proportions, it now being used rather freely by general physicians, pediatricians, internists, dentists and other practitioners. Likewise, equally or more popular, since the work of Sebrell and Butler,[1] followed by others, has become the diagnosis ariboflavinosis and cheilosis, the latter term having been coined by the original investigators to denote the commissural and other lip manifestations of that disease. Most writers, in describing the changes at the angles of the mouth in vitamin B complex deficiency, have captioned it "perlèche," though some have referred to it as "perlèche-like" involvement. Who of us has not seen many a patient of late who has been treated unsuccessfully by his pediatrician or general physician or dentist for fissuring of the oral commissures by administration of riboflavin, the treatment having been prescribed in the absence of other signs of vitamin deficiency? While it is true that in relatively subclinical states of hypovitaminosis the findings may be limited to fissuring or even milder involvement of the oral commissures, in the vast majority of patients with vitamin B complex deficiency other signs of such deficiency are demonstrable. Aside from the point, I have been amazed, in view of the reported frequency of ariboflavinosis in certain localities, especially in the South, how rarely I have encountered classic manifestations of the disorder as described by Sebrell and Butler, followed by many others, in this locality. Personal communications with members of the Department of Dermatology of the Mayo Clinic and with many others have disclosed the fact that their experience is similar to mine. My object in this communication, as the title implies, is to determine the nosologic position of perlèche, a fissuring inflammation of the oral commissures, which has, since its original description and naming in 1885 by Lemaistre,[2] been considered a disease entity.

SYMPTOMATOLOGY

Perlèche manifestations are now so well recognized that they scarcely warrant review. They are essentially the same in children and adults, irrespective of etiologic factors. Symptoms often associated with perlèche will be mentioned later.

Lemaistre gave this clinical picture one of the names prevalent for it in the Limousin dialect, a variant of *pourlécher,* to lick, it having been observed that persons having the disorder frequently moistened the affected areas with the tongue, a symptom which is of some etiologic significance.

The subjective symptoms of perlèche are mild, usually consisting merely of a feeling of dryness and at times a slight burning sensation. Deep, infected fissures may be painful and, though rarely encountered, occur chiefly in perlèche of adults.

Objectively, one sees the epithelium of one or both labial commissures early to be mother-of-pearl colored, somewhat macerated, either adherent or easily detached, and wrinkled, later the wrinkles becoming deeper, often forming usually one, sometimes multiple, transverse fissures with red bases, these fissures being with little if any tendency to bleed. The involvement usually stops rather abruptly just within the mucocutaneous junction of the commissure but extends as a localized erythematous scaling dermatitis, usually with fissuring, from a few millimeters to as much as 2 or more centimeters outward and downward from the mouth angle onto the skin. Inflammatory changes may extend from the commissures toward the middle of the lips for a centimeter or more, involving chiefly the lower lip. Untreated, the lesions in all types of perlèche have a tendency toward spontaneous remission and exacerbation, but they rarely disappear completely.

ETIOLOGY

There has always remained speculation as to the cause of perlèche, especially the perlèche of children. The final word with regard to all phases of its etiology cannot be stated at this time. It was long considered a disease entity of streptococcic origin. In Lemaistre's series of 300 patients, mostly children, he demonstrated what he termed Streptococcus plicatilis in many of them. Colcott Fox, Sabouraud, Cole and Jadassohn,[3] J. E. Lane,[4] W. L. Smith[5] and others also considered it of streptococcic origin on the basis of their bacteriologic studies. In Smith's instance an anaerobic streptococcus was isolated in pure culture in 135 out of 223 cases. There is no reason for doubting their findings. On the other hand, Raymond,[6] Planche[7] and others, as the result of their studies, attributed the disorder to staphy-

Read before the Section on Dermatology and Syphilology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Sebrell, W. H., and Butler, R. E.: Riboflavin Deficiency in Man: A Preliminary Note, Pub. Health Rep. **53**: 2282, 1938; **54**: 2121, 1939.
2. Lemaistre, J.: Etude sur l'air de la ville de Lemoges; de la perlèche; du streptococcus plicatilis, J. Soc. de méd. et pharm. de la Haute-Vienne **10**: 41, 1886.
3. Cole, Harold N.: Bakteriologische, histologische und experimentelle Beiträge zur Kentnis der Ekzeme und der Pyodermien, Arch. f. Dermat. u. Syph. **116**: 207-242, 1913.
4. Lane, J. E.: Perlèche, J. Cutan. Dis. **35**: 433, 1917.
5. Smith, W. L.: Perlèche: Its Bacteriology, Symptoms and Treatment in 223 Cases, Arch. Pediat. **34**: 274, 1917.
6. Raymond, Paul: Etude clinique et bactériologique fur la perlèche, Ann. de Dermat. et Syph. **24**: 578-584, 1893.
7. Planche, R.: La perlèche, Thesis, Paris, no. 246, 1897.

lococci, chiefly Staphylococcus cereus. In 1929 I [8] reported a study of over 100 children with perlèche, all from the same institution, in 77 per cent of whom fungi imperfecti, Monilia chiefly, were isolated from the lesions, with cultures of which the disease was reproduced in children from the same institution, children who presented grossly normal oral commissures, and the organisms were recovered in pure culture from the experimentally produced lesions. Similar findings have been recorded, chiefly in adults, by Robinson and Moss,[9] Skolnik,[10] Freund,[11] Frank,[12] McLeod [13] and a number of other investigators.

MALOCCLUSION PERLÈCHE

We have all of us all too frequently encountered treatment resistant chronic fissuring of the labial commissures, especially in elderly persons the majority of whom have false teeth. These cases include those instances primarily of mechanical origin, not only those resulting from malocclusion caused by ill fitting dentures but also those resulting from the sagging of tissues of elderly persons. Freund mentions among predisposing factors, in addition to general lowering of resistance, salivation induced by dentures.

Under the title Pseudo Ariboflavinosis, Ellenberg and Pollack [14] carefully studied a group of 34 patients with what they termed perlèche, all except 1 of whom were aged from 40 to 72 years, some of them having an associated glossitis, none of whom had other signs of avitaminosis and none of whom responded to intensive riboflavin and other vitamin therapy. Thirty-two of the 34 patients had upper and lower artificial, ill fitting dentures, which resulted in a mechanical defect. Their other 2 patients with perlèche, who did not have false teeth, had mechanical defects to explain the lesions, one a woman aged 26, who presented malocclusion, and the other an edentulous man aged 72, whose upper lip sagged so as to overlie the lower. They were able to demonstrate that the lesions in their cases were not due to specific allergy to the components of the dentures or to the presence of impurities in "undercured" vulcanite plates but definitely resulted from improper oral mechanics and in particular from an improper too short vertical dimension. As a result of the vertical dimension being too small, overclosure results, the upper lip overlapping the lower, thus producing creases at the corners of the mouth and sagging. They concluded that thus a pocket formation occurs at the lateral angles of the lips, a receptacle for saliva which becomes a medium for fungous growth, and that these fungi are a factor in the production of the cutaneous lesion of perlèche. Swenson [15] also accomplished eradication of perlèche associated with malocclusion by increasing the vertical dimension. Usually perlèche lesions do not appear until after dentures have been worn for as much as several years, during which time bone resorption is known to take place. The mechanical defect, causing a shortened vertical dimension with overclosure, has been concluded by several observers to result most often from ill fitting dentures, treatment for which consists of correction of the malocclusion.

Nippert and McGinty,[16] under the title of Riboflavin Deficiency versus Perlèche, described intertrigo of the labial commissures of adults as resulting most frequently from a narrowed bite, either because the natural teeth have been worn down or because of improperly fitting artificial dentures. They observed that the narrowed bite produces an additional fold at the labial commissures and that the skin in this area then, because of constant moisture from saliva, becomes macerated, fissured and infected.

VITAMIN DEFICIENCY PERLÈCHE

The renowned experimental work of Sebrell and Butler proved conclusively that symptoms, among others, identical to those long recognized as those of perlèche often result in human subjects from riboflavin deficiency, manifestations formerly described as pellagra sine pellagra. The lesions in their cases "began as a pallor of the mucosa of the lip in the angles of the mouth without involvement of the buccal mucosa. This pallor was soon followed by maceration, and within a few days superficial transverse fissures appeared, usually bilateral and exactly in the angles of the mouth. These fissures extended somewhat downward from the angle and there was very little inflammatory reaction. The lesions remained moist and became covered with a honey colored crust which could be scraped off without bleeding. In some instances the fissures extended onto the skin for a distance of as much as ½ inch. The lesions resemble those described as perlèche. At about the time the fissures were seen, the lips became abnormally red along the lines of closure. This was apparently due to a superficial denudation of the mucosa. In some cases, in addition to what was termed cheilosis, there was also seen a fine, scaly, slightly greasy desquamation on a mildly erythematous base in the nasolabial folds, on the alae nasi, in the vestibule of the nose and on the ears."

The cheilosis and other symptoms were identical with those experimentally produced by Goldberger, Wheeler and Tanner [17] and by Wheeler [18] and to those naturally occurring as described by Stannus [19] as angular stomatitis, by Wright [20] in Sierra Leone, responding to cod liver oil and yeast, by Fitzgerald [21] in 1932 in Assam prison, by Moore [21] in 1934 in school children in Nigeria, by Landor and Pallister [22] in the prisons of

8. Finnerud, C. W.: Perlèche: A Clinical and Etiologic Study of 100 Cases, Arch. Dermat. & Syph. **20:** 454 (Oct.) 1929.

9. Robinson, L. B., and Moss, M. C.: Superficial Glossitis and Perlèche Due to Monilia Albicans, Arch. Dermat. & Syph. **25:** 644 (April) 1932.

10. Skolnik, E. A.: Perlèche of Adults, Arch. Dermat. & Syph. **22:** 642 (Oct.) 1930.

11. Freund, H.: Ueber eine klinisch und aetiologisch charakterisierte Form von Perleche bei Erwachsenen; 'Interlabialmykose' und ihre symptomatische Bedeutung, Arch. f. Dermat. u. Syph. **164:** 614, 1931.

12. Frank, L. J.: Perlèche in Adults, Arch. Dermat. & Syph. **26:** 451 (Sept.) 1932; abstr., Brit. J. Dermat. **45:** 374, 1933.

13. MacLeod, J. M. H.: Skin Diseases Due to Monilia and Other Yeastlike Fungi, Brit. J. Dermat. **42:** 549, 1930.

14. Ellenberg, M., and Pollack, H.: Pseudo Ariboflavinosis, J. A. M. A. **119:** 790 (July 4) 1942.

15. Swenson, M. G.: Complete Dentures, St. Louis, C. V. Mosby Company, 1940.

16. Nippert, P. H., and McGinty, A. P.: Riboflavin Deficiency versus Perlèche: Differential Diagnosis of Fissuring of Labial Commissures, J. M. A. Georgia **32:** 295, 1943; abstr., J. A. M. A. **123:** 793 (Nov. 20) 1943.

17. Goldberger, J.; Wheeler, G. A., and Tanner, W. F.: Yeast in the Treatment of Pellagra and Blacktongue, Pub. Health Rep. **40:** 527, 1925.

18. Wheeler, G. A.: The Pellagra-Preventive Value of Autoclaved Dried Yeast, Canned Flaked Haddock and Canned Dried Peas, Pub. Health Rep. **48:** 67, 1933.

19. Stannus, H. S.: Pellagra in Nyasaland, Tr. Soc. Trop. Med. & Hyg. **5:** 112, 1912.

20. Wright, E. J.: Polyavitaminosis and Asulphurosis, Brit. M. J. **2:** 707, 1936.

21. Cited by Sebrell and Butler.[1]

22. Landor, J. V., and Pallister, R. A.: Avitaminosis B_2, Tr. Roy. Soc. Trop. Med. & Hyg. **29:** 121, 1935.

Singapore and Johore as avitaminosis B_2, by Aykroyd and Krishnan [23] in school children in southern India as angular stomatitis due to vitamin B_2 deficiency, although in A and K's cases beneficial results were obtained from the use of a yeast preparation treated to destroy flavin.

Naturally occurring riboflavin deficiency with lesions identical to those described by Sebrell and Butler has since been commonly observed in children and adults by these authors, by Jolliffe,[24] by Jolliffe, Fein and Rosenblum,[25] by Sydenstricker [26] and by many others, at times in association with a magenta colored fissured tongue. In a study of 241 infants and children aged 5 months to 14 years having characteristic riboflavin deficiency, Spies, Bean, Vilter and Huff [27] concluded that ariboflavinosis is more common in children in the southern part of the United States than any other deficiency syndrome, the manifestations consisting of cheilosis, the reddened macerated areas at the angles of the mouth and the linear lesions, first described as responding to riboflavin by Sebrell and Butler, and the ocular symptoms, characterized by bulbar conjunctivitis, lacrimation, burning of the eyes and failing vision, first found to respond to riboflavin by Spies, Vilter and Ashe.[28] Commonly the children were underweight and underdeveloped for their age. Some with advanced lesions of the eyes had no involvement of the mouth angles, and others presented severe involvement of the mouth angles whereas the eye lesions were slight. Bacteriologic study of the fissures of the mouth angles of 93 of the children showed either pure or nearly pure cultures of hemolytic Staphylococcus aureus in 80 per cent of the cases, and Streptococcus hemolyticus was the predominating organism in the remaining 20 per cent of the cases. Hemolytic strains of Staphylococcus aureus were isolated in 14 of 30 cases with conjunctivitis. They found the disease to be noncontagious. Under the simple treatment of 1 mg. of riboflavin three times daily or 1 ounce of brewers' yeast or liver extract daily, the lesions of the mouth angles healed and the ocular manifestations disappeared and it became impossible to demonstrate the presence of the micro-organisms which were present before therapy.

It has been repeatedly demonstrated and stressed by Sebrell and Butler, Spies, Bean and Ashe, Jolliffe and others that vitamin deficiencies are usually multiple. This fact undoubtedly accounts for perlèche commonly occurring in pellagra, the Plummer-Vinson syndrome, sprue, beriberi, celiac disease of children, tropical avitaminosis and other diseases. It may also account for the "angulus infectiosus" described, among others, by Reiss [29] in 40 per cent of his vitamin A deficiency cases, although he assumed that the lesions were due to the specific effect of avitaminosis A, expressed in terms of keratinizing metaplasia, which prepared a proper soil for the growth of monilias and bacteria.

Perlèche manifestations in vitamin deficiency diseases have in rare instances been eradicated by nicotinic acid, after failure with riboflavin, and in the cases reported by Smith and Martin [30] by administrations of pyridoxine.

IDIOPATHIC PERLÈCHE

In some cases of perlèche no etiologic factors can be elicited. Why, unless because of accompanying salivary drooling, or possibly excessive or chemically altered salivary secretion, should perlèche at times be seen in association with scrotal tongue, with geographic tongue or with macroglossia? Occasional instances of perlèche are encountered devoid of concomitant clinical or laboratory findings, which, in the light of present knowledge, must just plainly be considered as of idiopathic origin.

PSEUDOPERLÈCHE

The heading pseudoperlèche might well be included to denote the instances of contact dermatitis, neurodermatitis, seborrheic dermatitis, atopic dermatitis, severe "chapping," herpes and so on which, because of their localization being such as to include the region of the oral commissures, and because of the movement in this area by mastication, talking and the like cause a perlèche-like fissuring, merely instances of the inflammatory skin of the respective disorder being so filled with fluid that it can no longer stretch and therefore breaks, just as occurs elsewhere in inflammatory disorders in anatomic locations subjected to movement. It should be remembered that perlèche-like involvement is also seen at times in the rhagades of congenital syphilis and as an extension to this area from mucous patches of syphilis in the mouth. Transitorially, perlèche-like involvement may result from the trauma of manipulations incidental to dental therapy.

COMMENT

We have learned that this clinical picture apparently can be produced by streptococci and possibly other bacteria by monilias and probably other yeastlike organisms, by ill fitting dentures which are responsible for malocclusion, by the tendency in some elderly persons, as their skin becomes more lax, for the upper lip to override the lower, especially at the lateral margins, and now we learn that nutritional deficiencies can produce the same clinical picture, with or without signs of such deficiency elsewhere.

All micro-organisms claimed to date as being etiologic of perlèche have been repeatedly demonstrated as present in several large series of cases of this fissuring intertrigo of the oral commissures in ariboflavinosis and other hypovitaminotic processes and in mechanical defects resulting from malocclusion from ill fitting dentures and from the sagging tissues of the elderly. On correction of the hypovitaminosis or mechanical defect, the oral commissural fissuring and the organisms completely disappear. The streptococci, monilias and other micro-organisms therefore appear to be secondary factors in these types of perlèche, factors which merely aggravate the process. In time we may learn that the infection present is always a secondary factor. The interesting

23. Aykroyd, W. R., and Krishnan, B. G.: Stomatitis Due to Vitamin B_2 Deficiency, Indian J. M. Research **24**: 411, 1936; Treatment of Stomatitis Caused by Diet Deficiency, ibid. **25**: 643, 1938.

24. Jolliffe, N.: Clinical Aspects of Vitamin B Deficiency, Minnesota Med. **23**: 542, 1940.

25. Jolliffe, N.; Fein, H. D., and Rosenblum, L. A.: Riboflavin Deficiency in Man, New England J. Med. **221**: 921, 1939.

26. Sydenstricker, W. P.: Personal communication to Jolliffe.

27. Spies, T. D.; Bean, W. B.; Vilter, R. W., and Huff, N. E.: Endemic Riboflavin Deficiency in Infants and Children, Am. J. M. Sc. **200**: 697, 1940.

28. Spies, T. D.; Vilter, R. W., and Ashe, W. F.: Pellagra, Beriberi and Riboflavin Deficiency in Human Beings, J. A. M. A. **113**: 931 (Sept. 2) 1939.

29. Reiss, F.: A Contribution to the Cutaneous Manifestations of Vitamin A Deficiency, Chinese M. J. **50**: 945, 1936.

30. Smith, S. G., and Martin, D. W.: Use of Vitamin B_6 in the Treatment of Cheilosis, Proc. Soc. Exper. Biol. & Med. **43**: 660, 1940.

and timely observations of Paul Gross[31] certainly cannot go without mention, he having demonstrated that extensive monilial infections of the skin may respond promptly to liver extract therapy.

Although I do not believe all cases of perlèche to be primarily on a hypovitaminotic basis, noteworthy is the fact that all the children in my study were from a single institution, an orphanage. They were poor children. Most of the epidemics reported since the time of the original description of perlèche have occurred in similar institutions or in public schools composed of pupils of the poorer classes. In some instances all members of a single family have been affected. It appears likely to me that eventually these epidemic and endemic outbreaks might prove primarily to be on a nutritional basis, as is true of the prevalence of ariboflavinosis in certain areas of the South. My report fifteen years ago did not take into account the diets of the children in that institution. It occurred before the present era of nutrition mindedness. In a recent attempt, unfortunately, I have been unable to obtain accurate information as to the diets administered to the 1,250 children in that institution back in the 1920's. Especially interesting is the fact that 18 per cent of the children in my series of cases presented seborrheic dermatitis-like involvement of the face elsewhere, another 5 per cent of them a dermatitis of the alae nasi and nasal orifices and 2 per cent of them a cheilitis, which changes were found in many of the children in the institution who did not have perlèche.

These facts do tend to suggest that perlèche epidemically or endemically occurring might well be the result of malnutrition, any micro-organisms that are found merely being secondary invaders thriving on a soil suitably prepared for them. Whatever applies to my reported group of cases of apparent mycotic origin probably also applies to the numerous groups reported as being of bacterial origin.

It is likely that there is such a thing as perlèche which is primarily of bacterial or mycotic origin, but this has not been proved beyond doubt. Other systemic and local factors about which at present we know but little undoubtedly operate in the preparation of the soil as a prerequisite to its production. Until now we have been satisfied to consider perlèche an inflammatory change at the mouth angles of the infectious origin and let it go at that. The predisposing factors are undoubtedly systemic in nature, not alone avitaminotic but probably also the result of other nutritional and metabolic disturbances, such as might occur from lack of a sufficient supply of amino acids or minerals or from their improper assimilation. Otherwise why do we not see it in all children who habitually drool saliva at the corners of the mouth and all adults who have overhanging upper lips at the lateral margins? It elects its subjects, whether it occurs endemically, epidemically or sporadically.

It can no more be accurately stated why ariboflavinosis, for instance, elects the oral commissures as one of its favorite sites than why psoriasis, lichen planus, dermatitis herpetiformis, erythema multiforme and the numerous other dermatoses have their sites of predilection. Perlèche is no more of a disease entity than is onychia, paronychia, blepharitis or any one of the many disorders of manifold etiology which come to mind, in each instance it being necessary to modify the term by an etiologic descriptive adjective, such as, for example, traumatic, streptococcic or mycotic paronychia.

Any dermatitis is potentially an infectious dermatitis, due to the presence of micro-organisms which normally inhabit the skin and its accessory mucous membrane cavities. Perlèche is no exception.

SUMMARY AND CONCLUSIONS

Perlèche, a maceration with transverse fissuring of the oral commissures, has to date been regarded as a disease entity of infectious origin, some claiming it to be of bacterial etiology, usually streptococcic or staphylococcic, some of mycotic origin, usually monilial.

Identical cutaneous changes, with or without associated skin, tongue, scleral and systemic manifestations, have been repeatedly demonstrated, experimentally and naturally occurring, in vitamin deficiency diseases, in ariboflavinosis chiefly, but apparently also in nicotinic acid and pyridoxine deficiencies.

Furthermore, the same fissuring occurs at the mucocutaneous junction of the lips in persons with malocclusion the result of ill fitting dentures and in the aged in whom atrophy of the tissues has caused some overhanging of the upper lip at its lateral margins.

In all instances the cutaneous changes in the vicinity of the mouth angles are practically identical, consisting merely of a maceration with transverse fissuring in this area, popularly referred to as "cracks at the corners of the mouth."

Personal observations, together with a study of the literature, indicate that perlèche should no longer be regarded as a disease entity but rather merely as a cutaneous symptom occurring in the form of an intertrigo of the labial commissures, analogous to intertrigo elsewhere and of manifold etiology. Because of the necessary movement of this mucocutaneous junction, this localized dermatitis is usually associated with transverse fissuring. It therefore probably becomes proper to speak of as infectious perlèche those instances of the disorder which are considered to be primarily of bacterial or mycotic origin, as malocclusion or mechanical perlèche those seen in elderly persons and usually resulting from ill fitting dentures, as vitamin deficiency perlèche those of hypovitaminotic or avitaminotic origin, and as idiopathic perlèche those cases in which no etiologic factors can be determined.

Through respect for the individual who originally described and named this cutaneous change, and in view of the fact that through common usage perlèche has long been employed to denote transverse fissuring of the oral commissures, and because of its etiologic meaning and its brevity, it is suggested that the word perlèche, taken from the French word *pourlécher*, to lick, rather than interlabial dermatitis, angular stomatitis, oral commissural intertrigo or any of the other terms by which it has been designated be retained as indicative of this symptom.

55 East Washington Street.

31. Gross, P.: Nonpellagrous Eruptions Due to Deficiency of Vitamin B Complex, Arch. Dermat. & Syph. **43**: 504 (March) 1941.

AUTOLOGOUS PLASMA CLOT SUTURE OF NERVES

ITS USE IN CLINICAL SURGERY

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The conventional method of repairing severed nerves is by the use of silk sutures, which are introduced ideally through the connective tissue sheath of the nerve. Actually it is very difficult to avoid the inclusion of some nerve fibers in each suture, and these fibers may be strangulated when the threads are tied. This is especially true of small nerves with delicate connective tissue sheaths. A further objection to silk suture of nerves is that, when the threads are tied, there tends to occur some knuckling of fibers with disturbance of the longitudinal organization of nerve fiber pattern at the suture site. The knuckling of nerve fibers is very striking when pronounced retraction of the nerve sheaths has occurred, so that when the sutures are passed through the sheaths (which often do not come back over the bundles) and then tied, the stumps become pressed against one another and a tangle of fibers is apt to result. A third shortcoming of silk suture results from the difficulty in introducing the sutures at exactly corresponding circumferential points along the nerve stumps, which results in some degree of axial rotation when the sutures are tied, leading to malalinement of the groups of sensory and motor fibers in the two stumps. That is to say, motor fibers destined for one group of muscles may innervate another group or grow down sensory pathways into sensory end organs, and sensory fibers from the central stump may innervate motor schwannian tubes. Many of these misdirected fibers would represent a considerable loss from the functional standpoint. These factors then, i. e. the strangulation of nerve fibers with the fibrosis that ensues and the disruption of the normal alinement of nerve fibers at the suture site, together with the misdirection of axis cylinders, are probably important factors, although certainly not the only ones, in accounting for the incomplete recoveries and the failures that not infrequently follow silk suture of the peripheral nerves. Recently fine tantalum wire has been used instead of silk for suturing nerves. Although it is true that less inflammatory and fibrotic reaction occurs with tantalum, the objections raised to the use of silk hold also for tantalum wire or any other type of thread apposition suture.

Young and Medawar [1] recognized the need for an improved technic of nerve suture and conceived the brilliant idea of using clotted plasma instead of silk to unite divided nerves. This technic was in fact used by Seddon and Medawar [2] for the suture of the median nerve at the wrist in a man. I had been working on the problem of experimental nerve root suture for several years and was well aware of the shortcomings of the silk technic. The experiments of Young and Medawar were repeated,[3] and it was found possible to obtain successful sutures by their method of using fortified cockerel plasma clotted with chick embryo extract. However, microscopic studies following nerve suture with these substances in rabbits demonstrated that not infrequently an appreciable inflammatory and fibrotic reaction occurred. Because such a reaction might hamper the downgrowth of nerve fibers through the suture site, our experiments at this point were directed to the study of other types of plasma clots which would possess sufficient strength for successful suturing and yet not provoke as much tissue reaction as the use of cockerel plasma and chick embryo extract. The tensile strength of various types of plasma clots was studied by a simple method,[4] and it was found [5] that unmodified plasma (plasma prepared without the use of anticoagulants) allowed to clot spontaneously yielded stronger clots than those prepared from plasma to which anticoagulants (heparin, sodium citrate or potassium and ammonium oxalate) were added and later coagulated by the addition of rabbit clotting globulin or extracts from lung or muscle. In other words, the addition of the aforementioned anticoagulants and coagulants to the plasma tended to weaken the clots prepared from it. Moreover, it has been found [3] that the use of autologous plasma resulted in very little inflammatory or fibrotic reaction at the suture site—definitely less than with the use of heterologous plasma and clotting agent. For the purpose of suturing nerves we have therefore used autologous unmodified plasma which is allowed to clot spontaneously. More recent experiments [5] have shown that heparinized plasma coagulated by means of protamine sulfate yields clots which are as strong as those prepared from unmodified plasma and they provoke no significant tissue reaction. The use of heparin-protamine plasma clots offers a practical advantage in that one may avoid certain inconveniences involved in the preparation of unmodified plasma, such as the necessity of drawing the blood in a syringe coated with liquid petrolatum, transferring it into paraffin lined test tubes packed in ice and centrifuging it in metal cups of 100 to 250 cc. capacity filled with ice in order to prevent clotting. On the other hand the use of unmodified plasma eliminates the necessity of adding carefully measured small amounts of heparin and protamine sulfate to the blood and plasma respectively and of premixing the two solutions before they are introduced into the mold for nerve suture. We have used unmodified plasma regularly because of its simplicity and have had very little trouble as a result of premature clotting of it. As a further precaution against clotting of the plasma before use, one may chill the syringe used to collect the blood by spraying its outer surface with ethyl chloride or by placing it in the refrigerator for a few hours before it is used. After the test tubes containing the blood are centrifuged for three to five minutes at a speed of approximately 2,500 revolutions per minute they are transferred to pots of approximately 1 pint (500 cc.)

From the Neurosurgical Services of the Jewish Hospital of Brooklyn and the Flower-Fifth Avenue Hospital, New York.

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Dr. L. M. Davidoff gave considerable help in furthering the progress of this work. Major William Antopol, Dr. A. S. Wiener and Dr. T. I. Hoen offered helpful suggestions. The latex molds and the development of the various special instruments used are the result of collaboration with Mr. Cornelius Denslow and Mr. Saul Swarz. Dr. J. A. Moldaver and Dr. P. A. Hoefer carried out the chronaxia and electromyographic studies in several of the cases included in this report. These electrical tests were done at the New York Neurological Institute.

1. Young, J. Z., and Medawar, P. B.: Fibrin Suture of Peripheral Nerves, Lancet **1**: 126, 1940.

2. Seddon, H. T., and Medawar, P. B.: Fibrin Suture of Human Nerves, Lancet **2**: 87, 1942.

3. Tarlov, I. M., and Benjamin, B.: Autologous Plasma Clot Suture of Nerves, Science **95**: 258, 1942; Plasma Clot and Silk Suture of Nerves, Surg., Gynec. & Obst. **76**: 366, 1943.

4. Tarlov, I. M.; Goldfarb, A. I., and Benjamin, B.: A Method for Measuring the Tensile Strength and Stretch of Plasma Clots, J. Lab. & Clin. Med. **27**: 1333, 1942.

5. Shapiro, A.; Tarlov, I. M.; Oliver, R.; Goldfarb, A. I.; Bojar, S.; Kaslow, R., and Rockenmacher, M.: Plasma Clot Tensile Strength: II. The Effect of Some Physical Factors, Anticoagulants and Coagulants, J. Lab. & Clin. Med. **29**: 282, 1944.

capacity filled with ice. Salt should not be added to the ice, since the plasma may thus be frozen and it has been shown [6] that freezing impairs the strength of the clots prepared from the thawed plasma. Experimental nerve suture has been carried out successfully with clots prepared from dried plasma and from fibrinogen and thrombin.[7] Clots prepared from dried plasma are, however, weaker than those formed from fresh unmodified plasma [6] and they are therefore less desirable for nerve suture. Fibrinogen-thrombin clots are, in contrast to those formed from fresh unmodified plasma, practically irretractile, and it is as yet uncertain whether they are as desirable as the latter from the standpoint of the histologic reaction that they provoke when the fibrinogen is added in concentrations sufficient to impart adequate strength to the clots.

The technic of suturing nerves with plasma clot as used by Young and Medawar and also in our early experiments consisted in bringing the nerve ends together with fine forceps, depressing the junction into the fascial and muscle bed so as to form a trough and adding first the plasma and then the clotting agent. One of the most serious objections to this technic lay in the fact that the procedure of holding the nerve ends in apposition at the base of a trough formed by the neighboring tissues permitted the plasma to coat only the upper side of the nerve junction. Furthermore, unless a pool for the plasma could be formed around the suture site, the technic could not be used. Moreover, it proved to be difficult to hold the nerve ends in good apposition without any movement until clotting had occurred, and the junctions formed were often unsatisfactory. It became apparent then that, in order to obtain stronger unions and better apposition of nerve ends and to increase the field of usefulness of the technic, a method would have to be devised whereby the suture site could be completely surrounded by clot while the nerve ends were kept in accurate alinement regardless of the position of the nerve. After a long series of experiments [7] a rubber mold was designed for this purpose (fig. 8). The technic of plasma clot suture of peripheral nerves with the use of the mold was found to lead to satisfactory functional recovery only when the nerve ends could be brought together

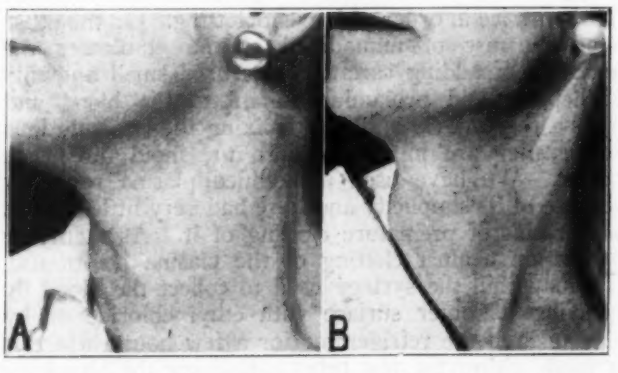

Fig. 1 (case 1).—Absence of contraction of sternocleidomastoid muscle is seen in patient soon after operation, *A*, but good contraction is apparent five and a half months after operation, *B*.

without appreciable strain at the suture site. When tension did exist at the suture site, the risk of subsequent detachment of the nerve ends was found to be great. Under conditons of tension, following a suggestion made to me by Col. R. Glen Spurling, fine tantalum wire (0.003 inch in diameter) was employed to overcome the strain and plasma clot then used for accurate coaptation of nerve ends. The tantalum wire tension sutures are introduced mainly through the

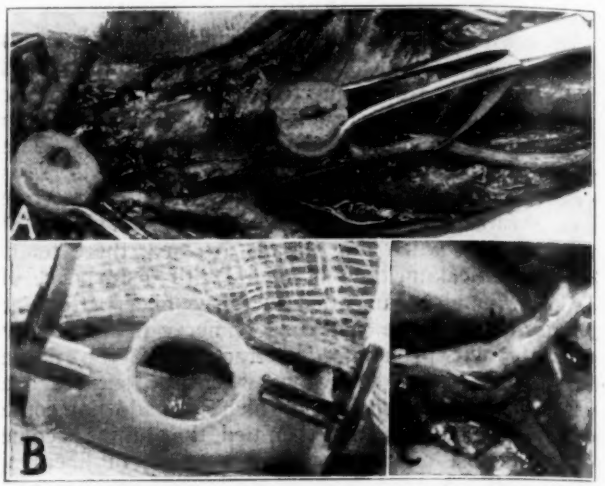

Fig. 2.—*A*, application of hemostatic forceps (fig. 8 *1*) to nerve stumps for the control of bleeding. The use of the airfoam rubber in the jaws of the instrument prevents damage to the nerve stumps. The grip of the forceps is relaxed gradually every few minutes until bleeding ceases and then the nerve is flooded out of the airfoam with squirts of isotonic solution of three chlorides; *B*, nerve ends in case 2 accurately adjusted on wire rails in latex mold with clips applied; *C*, suture site (marked by arrow) in hypoglossal-facial anastomosis (case 4) hardly visible—pronounced retraction of clot had occurred.

epineurium at a distance of about 1 cm. from the nerve ends. The technic of combined tantalum wire-plasma clot suture of peripheral nerves [8] has given very good results in animals and the technic was therefore applied in human cases. The results in those individuals in whom sufficient time has elapsed to justify some evaluation of the technic are gratifying and prompt publication of this report. Detailed accounts of the technic of plasma clot suture of nerves have been published elsewhere.[9]

REPORT OF CASES

Case 1.—The first patient in whom a nerve was sutured by means of autologous plasma clot was a woman aged 43 referred to in a previous report.[8] In brief, the spinal accessory nerve was sutured at a point about 4 cm. before its entrance into the sternocleidomastoid muscle. The suture was done about one hour after the nerve had been severed at operation, and complete recovery of function of the sternocleidomastoid muscle occurred five and one-half months later (fig. 1).

Case 2.—While a man aged 24 was carrying a plate glass, the glass broke, cutting the right forearm and wrist. Within an hour the ulnar nerve was said to have been sutured. The patient complained of weakness of his right hand, especially of the little finger, and loss of sensation along the inner border of the palm. There had been no change in the condition of his hand for six months. On examination the abnormal findings, confined to the right hand, were (1) smooth and delicate skin over the palm with two oblique scars in the midportion of the volar surface of the forearm 4 cm. above the wrist, (2) well defined atrophy of the interosseal spaces with flattening of the hypothenar and to a less extent of the thenar eminences, (3) inability to extend the little finger fully at the proximal or distal interphalangeal joints, (4) inability to abduct or adduct the index, middle, ring or little finger, (5) moderate weakness of flexion at the distal interphalangeal joints of the little and ring fingers, (6) moderate weakness of adduction of the thumb

6. Wagreich, H.; Sobel, A. E.; Levine, C., and Tarlov, I. M.: Studies on the Strength of Dehydrated Plasma, to be published.
7. Tarlov, I. M.; Denslow, C.; Swarz, S., and Pineles, D.: Plasma Clot Suture of Nerves: Experimental Technic, Arch. Surg. **47**: 44 (July) 1943.
8. Tarlov, I. M.: Plasma Clot Suture of Nerves: Illustrated Technic, Surgery **15**: 257, 1944.
9. Tarlov, Denslow, Swarz and Pineles.[7] Tarlov.[8]

and (7) loss of appreciation of pin prick and cotton wool and diminution of hot and cold sensation over the little finger and ulnar half of the ring finger and the inner part of the hand, both on the dorsal and on the volar aspects. It was apparent then that the signs and symptoms were the result of a complete severance of the ulnar nerve just above the wrist.

Operation was done fifteen months after the injury. The two bulbous ends of the nerve were firmly adherent to the surrounding tissues and were found to be separated by a gap of 2 cm., occupied by a band of fibrous tissue. The nerve stumps were liberated from the scar tissue and, after the main portions of the neuromas were excised, thin slices of the nerve ends were trimmed off serially until the funiculi appeared to be of a healthy pink hue, without appreciable scar tissue and bleeding freely. The bleeding from the cut ends of the nerve was arrested by means of pieces of crushed muscle, which were kept in place for a few minutes and then washed off with isotonic solution of three chlorides. The trimming of the nerve ends was done with the aid of a special nerve holder [8] (fig. 8 *C*). Following excision of the neuromas, the gap between the cut ends measured 4 cm. The nerve segments were then mobilized for about 6 cm. upward and 3 cm. downward. After they were thus freed from all neighboring restraints and the wrist flexed to an angle of 45 degrees it was possible to bring the ends of the nerve together without strain. The procedure of suturing the nerve ends was then begun. Two tantalum wire tension sutures were introduced mainly through the epineurium at a distance of 1 cm. from the cut surfaces of the nerve, one at each side of the plane of greatest diameter of the nerve. The wires were tightened until the nerve ends just touched each other, and then they were tied well away from the suture site. The purpose of the tension sutures is to absorb any sudden strains and prevent forces from pulling on the primary suture line. The nerve was then placed in a latex mold of appropriate size, and the nerve ends were accurately adjusted on the wire rails. Good apposition was thus obtained (fig. 2 *B*). The clips were applied to the fins of the mold and then 40 drops of autologous unmodified plasma were added. The plasma clotted in about five minutes. A few minutes later the wire rails were withdrawn, the clips were removed and the mold was peeled from the clot while it was protected with a special spoon the width of the mold during the withdrawal of the latter. The suture appeared to be quite a satisfactory one. The wound was closed with silk sutures. After a dressing was applied, the wrist was immobilized at an angle of 45 degrees in a plaster of paris cast for a period of six weeks, followed by gradual extension of the wrist.

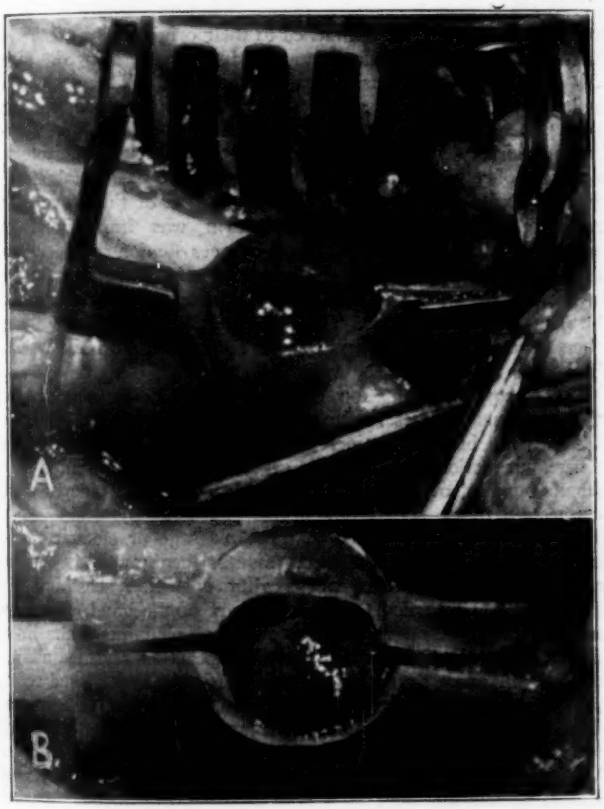

Fig. 3.—*A*, mold filled with autologous unmodified plasma; *B*, wire rails withdrawn from mold and clips removed.

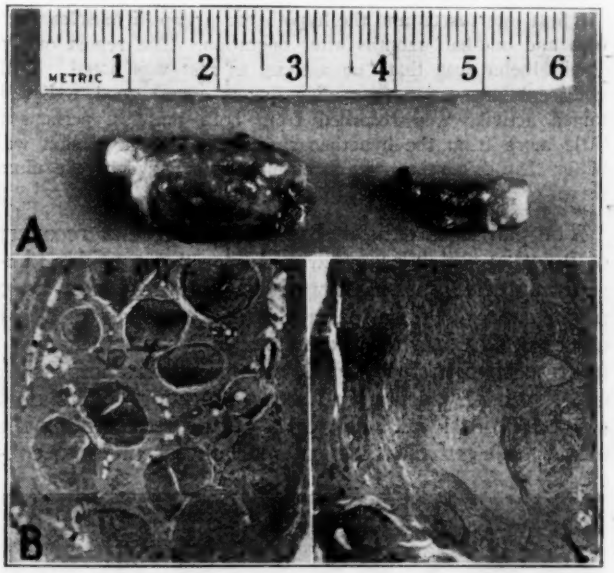

Fig. 4 (case 2).—Stumps of ulnar nerve (*A*), with sections through proximal (*B*) and distal (*C*) stumps contiguous to sutured surfaces of nerve (slightly reduced from photomicrographs with a magnification of 30 diameters). Note well formed bundles of nerve fibers showing slight increase of interfascicular connective tissue in proximal stump in contrast to the diffuse admixture of schwannian tubes and connective tissue in the distal stump, in which little bundle topography is discernible.

The slices of neuroma adjacent to the stumps, finally united, were studied microscopically. The sections of the proximal stump showed funiculi of nerve fibers (in Gross-Bielschowski preparations) with normal cellular and fibrillar sheaths. Between the bundles of nerve fibers there was a moderate increase of connective tissue (fig. 4). The distal stump presented fewer well formed fasiculi with a sprinkling of tubular structures made up of cells within a considerable fibrocellular matrix. Nerve fibers were not seen within the distal stump.

Massage and electrotherapy (galvanic stimulation) were begun when the cast was removed and continued three times weekly. Thirteen weeks after plasma clot suture of the nerve the patient had shown a considerable return of sensation for pin prick, cotton wool and hot and cold objects over the hand and fingers down to and including the proximal half of the fifth finger. Improvement in the power of flexion of the fourth and fifth fingers was apparent at this time also. Eight and one-half months after operation, sensation for pin prick, touch and hot and cold was felt over the entire hand, although not as acutely over the area supplied by the ulnar nerve as elsewhere. Full extension of the little finger was possible, and slight abduction and adduction was possible. Adduction of the thumb was good. When last seen eighteen months after operation, fairly good adduction and abduction of the index finger was possible, abduction of the little finger was good but adduction of this finger was only fair and considerably limited in range. These movements were barely discernible in the middle and ring fingers. Definite diminution in atrophy of the hand occurred (fig. 5).

Chronaxia studies carried out by Dr. Joseph Moldaver fourteen months after the nerve was sutured led to the following summary: "Stimulation of the ulnar nerve at the level of the wrist gave a response in the abductor minimi digiti. The latter muscle tested at its motor point had a chronaxia within the normal range: by longitudinal stimulation the chronaxia

was still increased, showing that some of the muscle fibers had not become reinnervated. The figures of chronaxia of the interossei are those found in partial denervation, there being a progressive decrease in chronaxia from the first to the fourth one. In summary there was evidence of partial reinnervation of the muscles supplied by the ulnar nerve."

Electromyograms were recorded with surface electrodes from the first interosseus and the hypothenar group of muscles fourteen and one-half months after operation. The report of Dr. Paul Hoefer was that "no activity at rest was noted. With volitional innervation (spreading fingers apart) good, well sustained activity was recorded from both muscles, perhaps a little more from the hypothenar group. The impression was better than fair reinnervation of muscles supplied by the ulnar nerve."

The patient is delighted with the degree of recovery of function which occurred and does not consider himself appreciably handicapped in his profession as a photographer. The fascicular pattern revealed by microscopic study of the nerve ends was such as to indicate that perfect bundle matching was impossible and is probably seldom obtainable, although one should strive for this ideal. However, during regeneration the axis cylinders from the proximal stumps undergo con-

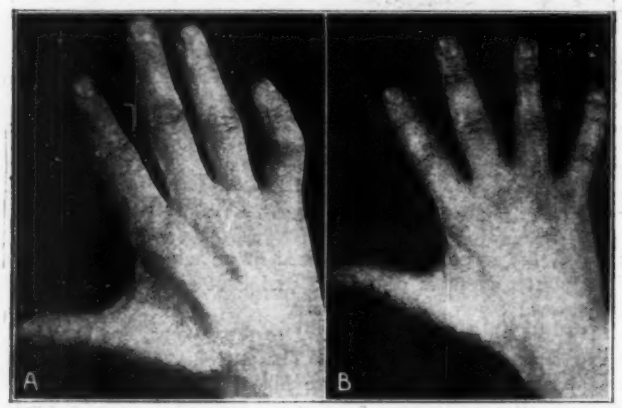

Fig. 5 (case 2).—Atrophy of the interosseal spaces and limitation of extension of the little finger is apparent before the plasma clot suture was done, with definite increase in atrophy of hand and return of ability to extend little finger shown at *B*, fifteen months after operation.

siderable branching, which results in a great excess of them so that many find appropriate pathways, reach proper end organs and lead to satisfactory restoration of function, such as occurred in this case. At operation the nerve ends were found to be separated by a gap of 2 cm. and, in view of the fact that a fifteen month interval elapsed before the nerve was sutured with plasma clot, the result appears to be quite a satisfactory one.

Case 3.—A woman aged 43 sustained a laceration of the right arm just below the elbow in 1933. Immediately after the injury she was aware of inability to extend her right little finger and, to a less extent, the ring finger. Six months later atrophy of the hand became apparent to her. In 1935 the ulnar nerve was sutured by the conventional method, using silk, following which some recovery occurred. The patient stated that all improvement ceased in 1940 and she became aware of an increasing stiffness of the ring and little finger. In May 1942 her attention was called to a tender lump on the anteromesial aspect of the right forearm. It was chiefly because of the tender mass that the patient consulted a physician. The following were the abnormal findings on examination (Feb. 12, 1943): 1. There was a 7 cm. scar beginning at a point just posterior to the medial epicondyle and running toward the volar aspect of the arm. Underlying the scar just distal to the medial epicondyle was a firm nodule about the size of a hazelnut, unattached to the skin but fixed to the underlying tissues. Palpation of the mass resulted in pain, which radiated downward along the ulnar aspect of the forearm and hand to the little finger. 2. The little finger was acutely flexed at the interphalangeal joints and hyperextended at the metacarpophalangeal joint. The finger could not be extended at all. 3. There was moderate hollowing of the interosseal spaces with flattening of the thenar and hypothenar eminences. 4. The patient was unable to adduct or abduct the little finger. Adduction of the thumb was impaired to the extent of 50 per cent, and adduction and abduction of the other fingers was approximately 75 per cent below normal in power. 5. There was well defined diminution in appreciation of pin prick, cotton wool and hot and cold over the little finger, the ulnar half of the ring finger and the corresponding portion of the volar and dorsal aspects of the hand.

On Feb. 12, 1943 operation was done and a large neuroma in continuity was found on the ulnar nerve 2 cm. below the medial epicondyle. The bulbous neuroma with the short attached segments of ulnar nerve measured 4.5 cm. long and 1.5 cm. in diameter. This was excised, and the nerve ends were fairly normal looking. The gap between the nerve ends measured approximately 6. mm. The ulnar nerve was freed upward to the point of junction of the lower and middle thirds of the arm and downward to the middle of the forearm. The elbow was flexed to a right angle and, to help further in overcoming the gap between the nerve ends and also in order to transplant the nerve to an unscarred bed the procedure recommended by Learmonth [10] was followed. Accordingly the flexor-pronator muscles were detached and reflected. The nerve was sutured and placed alongside the median nerve, and the flexor-pronator muscles were reattached to their origin. The combined tantalum wire-plasma clot suture technic was employed, using 30 drops of autologous unmodified plasma. The peripheral stump was somewhat smaller than the central one and, in order to equalize the cross sectional areas of the contact surfaces which were to be united, a small amount of isotonic solution of three chlorides was injected into the distal stump just beyond the cut surface. The apposition of the nerve ends appeared quite satisfactory. The arm was immobilized in plaster of paris at an angle of 90 degrees flexion at the elbow and kept in this position for a period of eight weeks, after which it was put up in a right angle metal splint which could be bent to a set contour. Gradual extension of the elbow was then begun, and full extension was accomplished in six weeks. This was accompanied by very little pain.

Microscopic examination of the slice of nerve adjacent to the proximal contact surface revealed large bundles of nerve fibers with but slight increase of the perineural connective tissue, but sections prepared from the distal stump presented very small bundles of nerve fibers with a moderate increase of connective tissue between them.

The patient received two to three massage or electric treatments for a period of several months beginning six weeks after operation. Sixteen weeks after operation sensation for pin prick had returned to the inner part of the hand, the ulnar half of the right finger and the proximal phalanx of the little finger. Examination six months after operation revealed ability to feel pin prick over the entire little finger and the adjacent portion of the ring finger. The little finger was still in the flexed position, but it could be extended about 35 degrees at the proximal and 25 degrees at the distal interphalangeal joints. When last seen sixteen months after operation, sensation was almost normal although very little improvement in motor power had occurred.

Dr. Moldaver's summary of chronaxia studies carried out twelve months after the plasma clot suture was done follows: "Stimulation of the ulnar nerve above the injury gave a response in the abductor minimi digiti. The latter muscle, as well as the interossei, had an increased chronaxia. The figures were within the range of those generally found in partial denervation. The amplitude of the contraction was diminished. The suture was apparently successful, although part of the muscle fibers

10. Learmonth, J. R.: A Technic for Transplanting the Ulnar Nerve, Surg., Gynec. & Obst. **75**: 792, 1942.

supplied by the ulnar nerve had become wasted. The flexor carpi ulnaris could not be stimulated and seemed to have completely disappeared. When the plasma clot suture was performed, part of the muscle fibers had apparently undergone complete atrophy. This explains why the sensory fibers might show evidence of complete regeneration but not the motor."

Electromyograms were recorded by Dr. Paul Hoefer with surface electrodes from the right hypothenar group of muscles. This was done twelve and one-half months after the nerve suture. Dr. Hoefer's report states that "a good deal of activity at rest was noted often in runs suggestive of repetitive discharges of single motor units. A fair amount of activity was recorded with volitional innervation (abduction of the fifth finger). Impression: The record suggests fasicular discharges and fair reinnervation of the hypothenar group."

A considerable degree of atrophy of the hand and contracture of the little finger had occurred in the ten year interval between the time of the initial injury and the plasma clot suture. The findings indicated also that there had taken place a considerable degree of fibrosis around the joints and in muscle, with possibly consequent atrophy or disintegration of some nerve terminals. Under such circumstances it is doubtful that a satisfactory result can be expected even though regeneration of the nerve may occur. Whether reconversion of fibrous tissue into muscle or the reappearance of nerve terminals can occur is unsettled. It is, however, of the greatest importance to take precautions against overstretching or other types of damage to muscles and joints both before and after operation. Massage, electrotherapy and passive movements appear to be of some value in this respect, although precisely to what extent has not yet been determined.

CASE 4.—A man aged 44 had complete removal of a perineurial fibroblastoma arising from the left acoustic nerve by Dr. L. M. Davidoff, the inevitable price paid for the complete removal of his tumor being a left facial paralysis. Seventeen days after the intracranial operation a left hypoglossal-facial anastomosis was done. The facial nerve was cut at its point of exit from the stylomastoid foramen, and the cut end of the distal segment was sutured to the central segment of the cut hypoglossal nerve (fig. 2*C*). Two tantalum wire tension sutures and 15 drops of autologous unmodified plasma were used for the suture. In order to avoid to some extent the sacrifice of function following section of the hypoglossal nerve, the distal end of this nerve was anastomosed to the cut end of the central segment of the descendens hypoglossi. The descendens hypoglossi was injected with isotonic solution of three chlorides just before the anastomosis was done in order to decrease the inequality in cross sectional areas of the contact surfaces of the nerves to be joined. Eight drops of plasma were used for the second suture. Following operation, support was given to the facial muscles in order to prevent overstretching of them. This was done by adhesive strapping to the skin over the supralabial and infralabial muscles and then fastening the tape to the temporal region. Also for a period of ten months the patient received massage and galvanic stimulation to the facial muscles twice weekly. The facial deformity had lessened considerably thirteen weeks after the anastomosis and the face had become almost symmetrical at rest. At this time the patient had become able to move the angle of his mouth to a slight extent and he was able to close his left eye (figs. 6 and 7).

Eleven months after operation the patient's face was almost symmetrical at rest and eye closure was strong. He was able to draw the corner of his mouth upward and outward. His chief handicap is inability to protrude his tongue, to show his teeth fully or to retract the angle of his mouth on the left side without closing his left eye.

Dr. Moldaver carried out chronaxia studies on this patient eleven months after the nerve anastomosis and summarized his results as follows: "Muscles of the left side of the face had chronaxias close to the normal range except for the quadratus labii superior and orbicularis oris superior. In the latter muscles there was still a slight increase of the chronaxia. Stimulation of the peripheral end of the facial nerve gave a fairly good response in all the muscles supplied by it. Compared with the right side, the amplitude of the contraction was smaller. Muscles of the left half of the tongue had an increased chronaxia, and the figure was that generally found in partial reinnervation. In summary, reinnervation took place in all the muscles of the left side of the face and partially in the left side of the tongue."

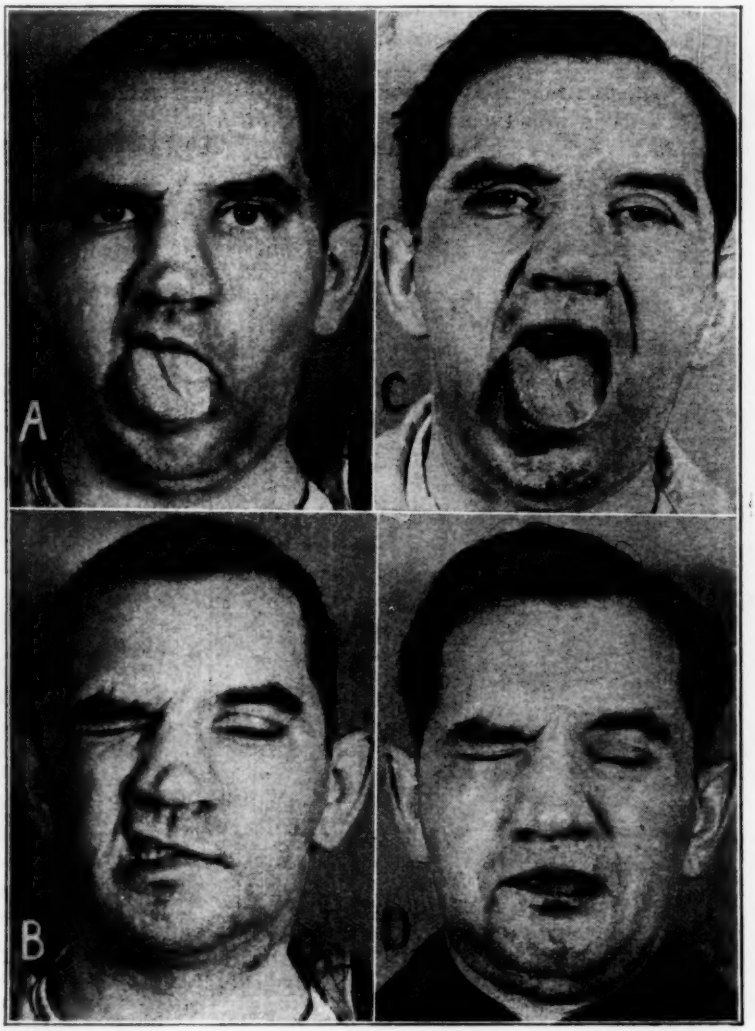

Fig. 6 (case 4).—Asymmetry of face is seen when the tongue is protruded, the eyes are closed and the teeth are shown in *A* and *B*, soon after operation. Improvement is apparent in retraction of the corners of the mouth and in closure of the eye (*C* and *D*, seven and four months respectively after operation).

Electromyograms recorded with surface electrodes from the left frontalis, orbicularis oculi, zygomatii and platysma muscles eleven and one-half months after operation led to the following report by Dr. Hoefer: "All muscles showed a slight irregular continuous amount of activity at rest. No single unit discharges could be identified. With attempts at wrinkling his

forehead, closing his left eye, wrinkling his nose, tightening his platysma and putting his tongue out, irregular activity was recorded simultaneously in all four muscles. Impression: The findings have to be interpreted as indicative of undifferentiated mass innervation of all muscles supplied by the faciohypoglossal anastomosis."

It is now fifteen months since operation and the patient believes that he is making some headway in the dissociation of the various face and tongue movements, although this is not yet very apparent. He remains unable to wrinkle his brow on the left side, a function which uncommonly returns after anastomosis of the facial nerve.[11]

The first evidence of regeneration in this patient was the increase of tone with decrease in asymmetry of the face followed by return of motor power of the orbicularis oculi and then the orbicularis oris. The atrophy of the patient's tongue is pronounced but probably not as much as it would have been if the central end of the ansa hypoglossi had not been sutured to the distal

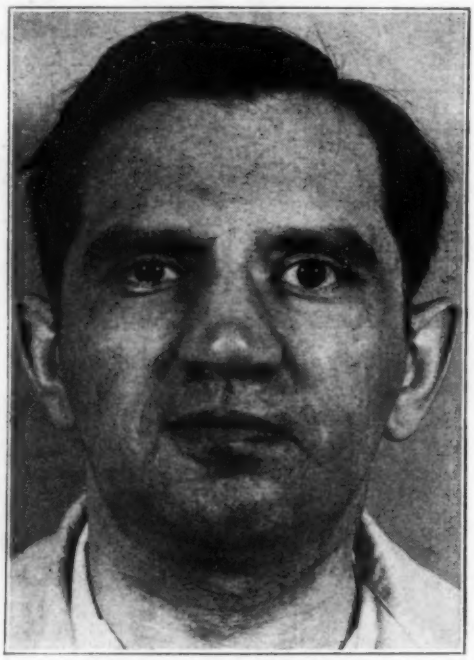

Fig 7 (case 4).—Asymmetry of the face had lessened considerably four months after operation.

end of the hypoglossal nerve. At any rate the patient prefers the paresis of one half of his tongue to his previous complete facial paralysis. The chronaxia studies confirm the impression that some reinnervation of the tongue on the left side had taken place. The hypoglossal nerve was chosen in this case rather than the spinal accessory, since the patient is a manual worker and would probably have been more severely handicapped by a paralysis of his shoulder had the latter nerve been used. In 2 patients (both salesmen) subsequently operated on the spinal accessory nerve was used rather than the hypoglossal, since they considered that they would be more handicapped by a paralysis of one half of their tongue than of one shoulder.

Autologous plasma clot suture of nerves was employed in 10 additional cases, 3 spinal accessory-facial and 1 hypoglossal-facial anastomosis, 2 cases of neuroma of the ulnar and 1 of the median nerve, a patient with severance of the common peroneal nerve and in 2 patients with severed digital nerves of the index finger. In 1 of the latter cases the use of a nerve autograft (lateral femoral cutaneus) was necessary to repair the defect after resection of the neuromas. In both of these cases the tissues surrounding the nerves to be sutured formed an almost perfect receptacle in which the plasma pooled around the apposed nerve ends. One of the patients of this series failed to return for follow-up study. Another patient was a physician in whom a hypoglossal-facial anastomosis was performed four and one-half months ago with the result that considerable return of facial symmetry has occurred and there is definite voluntary facial movement around the angle of the mouth, first noticed three months postoperatively. A similar type of recovery is occurring in 1 of 2 patients in whom spinal accessory-facial anastomoses were performed five months ago. In another patient, an adult, a neuroma of the ulnar nerve at the level of the elbow was excised four weeks after injury by a bullet wound. The combined tantalum wire-plasma clot technic was used. Twelve weeks later Tinel's sign was present at the level of the junction of the middle and lower thirds of the forearm, and seventeen weeks after operation it had migrated downward to the middle of the ulnar aspect of the palm of the hand. Pin prick appreciation had returned in patchy distribution over the palm and volar aspect of the little and adjacent portion of the ring finger. In the other patients insufficient time (three to ten weeks) has elapsed for evaluation of results. No neuromas were palpable at the suture sites in any of the patients.

COMMENT

That satisfactory results do frequently follow silk or tantalum wire suture of nerves cannot be doubted. However, in those instances in which very little or no recovery of function follows the classic silk technic, it seems likely that fibrosis at the suture site or malalinement of nerve ends may represent important factors in accounting for the imperfect results. The use of the combined tantalum wire-autologous plasma clot technic overcomes many of the objections to the use of any type of thread apposition suture: tissue reaction to the tantalum wire and autologous clot is either minimal or absent, and no neuromas were palpable at the suture site in any of the human cases; little or no handling of the cut surfaces of the nerves is necessary with the combined technic, and no strangulation of tissue at the suture site with subsequent fibrosis which interferes with regeneration occurs; although accurate point to point apposition in a microscopic sense is impossible, to obtain a closer approach to this ideal may be made with plasma clot than with thread suture, and less disorganization of the nerve fiber pattern at the suture site is apt to occur.

Certainly the foregoing factors are not the only ones that govern the functional result from any type of nerve suture. The condition of the muscles and end organs innervated by the nerve are of great importance in this regard, and this is determined largely by the interval which has elapsed between the time of the injury and that of operation and the treatment administered in the interim. Muscles that have been allowed to become overstretched and fibrotic and end organs that have

11. Coleman, C. C.: Surgical Lesions of the Facial Nerve, with Comments on Its Anatomy, Ann. Surg. **119**: 641, 1944.

become atrophied as a result of inactivity are not as readily restored to a functional state by satisfactory nerve suture as those which have been massaged regularly and protected from the trauma of being overpulled by antagonistic muscles during a shorter interval before nerve repair.

The condition of the nerve stumps to be sutured is also important, since even though a perfect apposition of them may be obtained the functional result will be unsatisfactory if the stumps contain a tangle of nerve fibers amid scar tissue. In instances in which it is difficult to be certain whether the cut ends of a nerve present a fairly normal pattern of nerve bundles, it seems wise to excise a thin slice and examine the tissue microscopically after a frozen section has been stained with hematoxylin and eosin or the van Gieson technic. If the tissue proves to be neuromatous, the excision should be continued serially until the stumps appear free from appreciable scar tissue. In some cases such a procedure might result in a gap which precludes primary end to end suture even when the usual methods are used for the reduction in size of gaps, such as the mobilization or rerouting of nerves or positioning of the joints of an extremity to shorten the course of a nerve. Under these circumstances some form of nerve graft would appear to be preferable either to suturing the nerve ends under great tension or failing to excise the neuroma and accomplishing primary end to end suture of neuromatous stumps.

Although the condition of the nerve stumps and of the innervated muscles and end organs is of paramount importance in regard to the outcome of nerve suture, the technic of joining the ends too plays an important role in determining the result which may be expected from the procedure. Since better apposition of nerve ends with less disorganization at the suture site seems possible with the use of tantalum wire tension sutures in conjunction with autologous plasma clot than with any type of thread apposition suture, it seems worth while to continue the use of this technic for the repair of peripheral nerves in human beings.

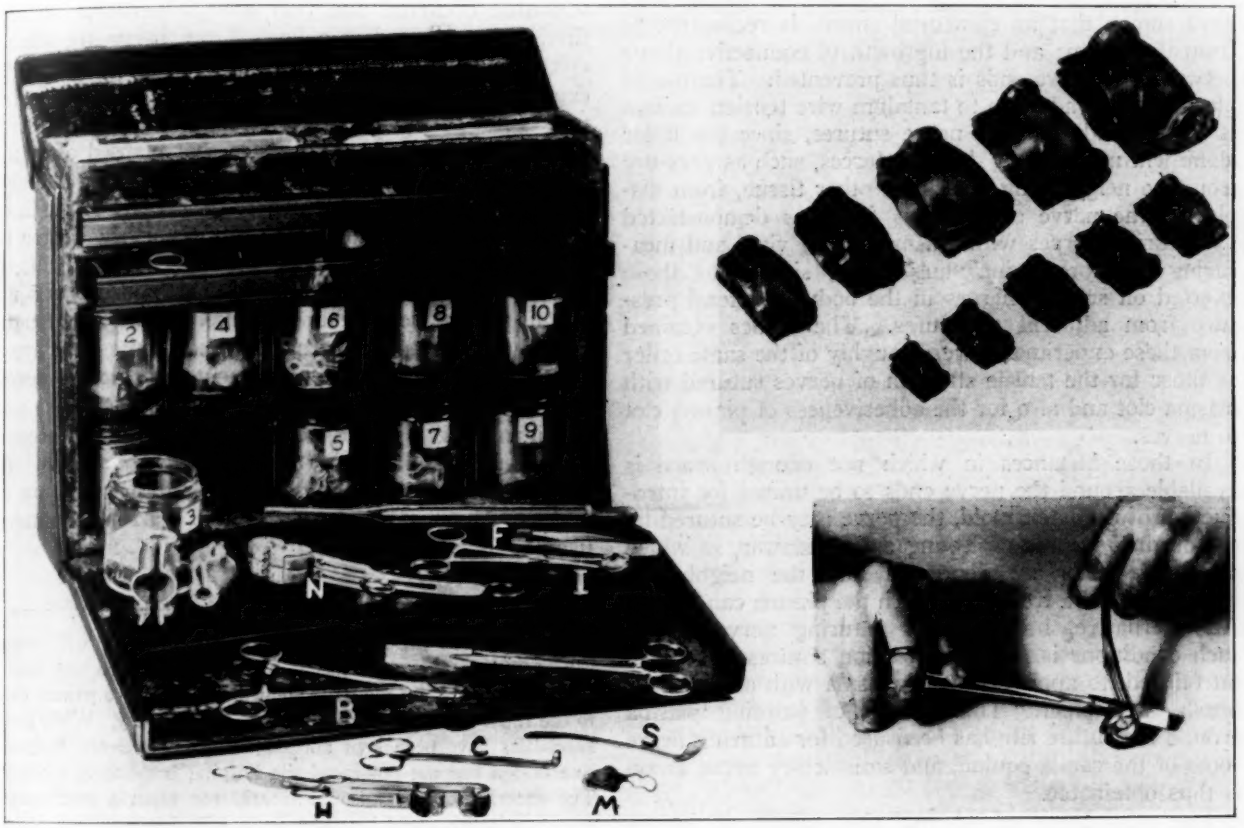

Fig. 8.—Plasma clot suture kit contains an assortment of molds (upper right inset) suitable for suturing nerves ranging in size from those 1 mm. in diameter to others the size of the sciatic nerve. The molds, which are made in ten sizes, are sterilized in 70 per cent alcohol in the bottles shown. The lower right inset illustrates the method of excising thin slices of nerve stump with the use of the special nerve holder (*H*), which differs from the one (*N*) shown in the kit in having toothed blades on one side of the slot rather than airfoam. By means of the special nerve holder (*H*) one is enabled to trim off thinner slices of nerve than with the other type of holder (*N*). The razor blade contains two holes, into which fit the two prongs of the blade holder (*B*), thus preventing movement of the blade in the holder. The spoon (*S*) is made in an assortment of sizes corresponding to the length of the mold employed in a particular case. It is used for the protection of the sutured nerve during the withdrawal of the mold. By means of the clip holder (*C*) the metal clips are applied to the fins of the rubber mold (*M*). The tips of the forceps (*F*) are covered with airfoam rubber so that damage to nerves consequent to the handling of them, especially thin nerves with delicate connective tissue sheaths, is minimized. The instrument *I* is a nerve hemostat the jaws of which are covered with airfoam rubber, which is grooved to accommodate the nerve. The lock of the hemostat is closed notch by notch until bleeding from the nerve stump ceases. The end of the stump must be flush with the edge of the airfoam or, if it protrudes from it, a hematoma is apt to form. In the top compartment are shown paraffin lined test tubes for the collection of blood from which the unmodified plasma is prepared. The special instruments are made by Edward Weck & Co., Brooklyn. The latex molds are made by Mr. Cornelius Denslow, 455 East Forty-Second Street, Brooklyn.

There has been a tendency to surround sutured nerves by cuffs made of various materials,[12] most recently tantalum, for the purpose of protecting the suture site in those instances in which its bed consists of scar tissue. Following the use of this procedure in the experimental animal (dog) I have found that the tantalum foil cuff becomes enveloped in a connective tissue

12. Spurling, R. G.: Tantalum in Repair of Peripheral Nerves, M. Clin. North America **23**: 1489, 1943.

membrane, and, although it is true that fixation of the suture site is thereby prevented, the nerve does become adherent to the surrounding tissue above and below the cuff—a rather dubious advantage. The use of tantalum or other types of foil or membrane to prevent the ingrowth of connective tissue between the nerve ends is unnecessary, since plasma clot by virtue of its being converted into an epineurial sheath accomplishes this purpose. Rather than surrounding the suture site with tantalum foil it would appear to be more advisable, when performing nerve suture in a cicatricial bed, to attempt, if possible, transplantation of the nerve to a bed relatively free from scar tissue.

The question has been raised as to the necessity of using plasma clot in addition to tension sutures for uniting nerves. In other words, will not tension sutures alone suffice for this purpose? Experiments on dogs have shown that an epineurial sheath is reconstructed from the plasma and the ingrowth of connective tissue between the nerve ends is thus prevented. The use of plasma clot in addition to tantalum wire tension sutures is further indicated for nerve sutures, since the latter alone will not prevent shearing forces, such as pressure from the neighboring muscle or other tissue, from displacing the nerve ends. This fact was demonstrated by suturing nerves with plasma clot in vitro and measuring the forces, including shear, similar to those exerted on sutured nerves in the body by lateral pressure from adjacent structures. The values obtained from these experiments were roughly of the same order as those for the tensile strength of nerves sutured with plasma clot and also for the adhesiveness of plasma clot to nerves.

In those instances in which not enough space is available around the nerve ends to be united for introduction of the latex mold, the nerve may be sutured by the original technic of Young and Medawar, in which the nerve ends are depressed into the neighboring tissues to form a trough in which the plasma can collect. An alternative, however, for suturing nerves under such conditions is, after the tension sutures have been introduced, to apply a coat of plasma with a sable hair brush or a pipet. This technic of painting plasma around the suture site has been used for suturing nerve roots of the cauda equina, and satisfactory nerve union is thus obtainable.

The advantages of plasma clot suture of nerves become especially apparent in the suture of small nerves, where excellent apposition may be obtained in cases in which the use of thread suture would result in considerable damage to the nerve stumps. This superiority of plasma clot suture was clearly demonstrated in the 2 cases of digital nerve suture, in 1 of which a nerve graft was used. In the latter case the newly made juncture was barely apparent after the suture was completed. For the suture of cable grafts—and there is evidence that such grafts are superior to single thick grafts for the repair of large nerves—the use of plasma clot is virtually indispensable, since thread suture under these conditions is unsatisfactory.[13]

SUMMARY

Autologous plasma clot suture of peripheral nerves was carried out in 14 cases, in about half of which sufficient time has elapsed since the operation to enable one to draw some conclusions about the procedure. In 1 case complete recovery of function of the sternocleidomastoid muscle occurred five and one-half months after the spinal accessory nerve was sutured at a point 4 cm. before its entrance into the muscle. In a patient in whom the ulnar nerve was sutured at the level of the wrist, good recovery of sensory and motor function of the hand occurred together with lessening of the extent of the atrophy, and the patient is continuing to show improvement at present, eighteen months after the operation. The result in this case seems especially gratifying in view of the long interval (fifteen months) which elapsed between the time of injury and that of the plasma clot suture and the fact that at operation the nerve stumps were found to be separated by a gap of 2 cm. In a third patient satisfactory recovery of sensation occurred one year after a neuroma in continuity was excised at a level 2 cm. below the medial epicondyle of the humerus. The fact that only a slight degree of recovery of motor power followed the operation is not surprising in view of the very long interval of over nine and one-half years that elapsed after the injury before the plasma clot suture was done and also considering the advanced degree of atrophy of the hand muscles. In the fourth case a satisfactory degree of reinnervation of the facial muscles occurred fifteen months after a hypoglossal-facial anastomosis was done. In this patient, some return of innervation of the tongue followed suture of the proximal end of the ansa hypoglossi to the distal end of the cut hypoglossal nerve. In 3 other cases, two facial anastomosis operations and one ulnar nerve suture, recovery of function is becoming manifest four to five months after operation. In general the results of autologous plasma clot suture of nerves in man are encouraging and warrant continued use of this technic.

1150 Fifth Avenue.

13. The problem of nerve grafts is to be dealt with in an article now being prepared for publication.

Hospitals of the Future.—Tomorrow's hospital will clearly reflect the great strides made in medical research and invention. Unfortunately we have applied our inventive powers only to the small mechanical parts of the hospital today. While these specialties have been kept abreast of medical science, imaginative design has not embraced the hospital building as a whole. The exterior of the hospital is still too often a monumental structure which could be taken for a school, a courthouse—any number of things—but seldom a hospital. However, architects today are gradually freeing themselves from the stylistic building traditions of the past. See to it that your building is designed from the inside out; that its functional relationships and its efficiency of operation are the first considerations. Remember that a hospital is a complicated piece of machinery and that it is a machine which serves a rapidly progressing profession. The last few years have seen astonishing progress in diagnostic, operative and therapeutic technics. The end is not in sight. Keep the plan flexible. Design it so that there will be an opportunity to fit it into the medical science of tomorrow. Do not make it a monument to any architect or building committee. Do not necessarily build it to last a hundred years. It may be obsolete in twenty. New methods of lighting and of heating are upon us. New materials, new types of construction will be available. Scientific and engineering progress have been moving faster than that of the architectural profession and have attained such speed that it is unwise to attempt to solve the future generations' problems for them.—New Architecture and City Planning, A Symposium, edited by Paul Zucker, New York, Philosophical Library, 1944.

RATIONALE FOR USE OF VITAMINS IN THE THERAPY OF SHOCK AND ANOXIA

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GLENOLDEN, PA.

To many it may seem that a discussion of the rationale for the use of vitamins in the therapy of conditions other than those produced by avitaminosis is, on the face of it, absurd. However, as I hope to be able to point out, there is a very definite reason for their use, and probably for their administration in fairly large quantities, in conditions associated with anoxia of various types.

I believe that I can best clarify this concept by a brief discussion of research done at the Department of Pharmacology of Vanderbilt Medical School by a group under the direction of Dr. Paul D. Lamson.

In 1940 work was begun in this laboratory in an effort to discover something about the causation and therapy of shock. Of course it had been well established by other workers that shock is associated with a pronounced decrease in circulating blood volume, with tissue anoxia and with various other measurable changes, but the exact mechanism of action of these changes in producing irreversible shock was not too well understood. It was also well known that plasma was an efficient remedy if given early enough in the course of the syndrome.

This research group found very early in the study that the occurrence of prolonged hyperglycemia in shock induced by hemorrhage was recognized but that very little attention had been paid to its significance. It seemed not unreasonable that a hyperglycemia should occur in view of the intense sympathetic nervous system stimulation, but it was not clear as to why the elevation of blood sugar should remain for several hours, only gradually decreasing as the animal became moribund. It seemed to us that results beneficial to the animal might be obtained if this blood sugar could be replaced in the liver as glycogen or be burned. A number of experiments were carried out, using insulin, in an attempt to achieve this result, without success.

However, our attention was drawn to the work of Tonutti and Wallraff,[1] which showed that the liver of a thiamine deficient mouse cannot store glycogen. In addition, Blotevogel and Tonutti[2] had used thiamine as an apparently successful treatment for severe burns.

On the basis of these investigators' results, shock was induced in a number of dogs by fractional bleedings and thiamine administered to half of them, with an apparent beneficial result in that the thiamine treated dogs lived longer than did the controls.[3] This result led us to consider the question as to whether the thiamine was acting in its normal manner as a coenzyme in tissue metabolism because an animal in shock was in some way thiamine deficient or whether the thiamine was acting in some other manner.

A diagnostic test for thiamine deficiency well known to clinicians is the estimation of the level of pyruvic acid in the blood. Since breakdown of pyruvic acid requires phosphorylated thiamine or cocarboxylase as a coenzyme, a deficiency of thiamine will cause pyruvate to pile up in the circulating blood. Blood pyruvate determinations were done on a number of animals in shock, and the pyruvate level of the circulating blood was seen to rise from a normal amount of 1.0 to 2.0 mg. per hundred cubic centimeters to 4.0 or 5.0 mg. per hundred cubic centimeters of blood.[4] This level is actually higher than that seen in most cases of beriberi, clinically. Thus it would appear either that these animals became thiamine deficient as shock was induced or that their thiamine became incapable of functioning in a normal manner.

By way of attack from a slightly different angle on this problem, it was thought of possible interest to find out whether the amount of thiamine initially present in the dog might have some relation to the ease with which shock was induced in the animal. Consequently, avitaminosis B_1 was produced in a number of dogs, whereas others were given a stock diet fortified with thiamine. An index of deficiency was given by the determination of plasma thiamine levels. The difference in ease of production of shock was very striking. Seven of 9 thiamine deficient dogs went into shock after a total bleeding of less than 4.0 per cent of body weight, whereas all of 16 thiamine fortified dogs required more than this amount of bleeding, and 44 per cent of them required even more than 5 per cent of body weight in blood removed before prolonged hypotension was produced.[5] Other pronounced differences were noticed between these two groups of animals. The blood pressure of the low thiamine dogs dropped precipitously after the first few bleedings and remained low (between 45 and 60 mm. of mercury) throughout the experiment, whereas the blood pressure of the thiamine fortified dogs showed a constant tendency to rise, even after more than 5.0 per cent of the body weight in blood had been removed in some cases. Copious intestinal hemorrhage occurred in 86 per cent of the low thiamine animals and was not seen at all in the high thiamine dogs. Hemoconcentration was also much less frequent in the dogs having high plasma thiamine levels. The paucity of changes occurring in the fortified dogs led us to be of the belief that these dogs probably did not go into shock at all.

With reference to the use of thiamine in the treatment of shock in this series of animals, it may be said that, rather surprisingly, the best results (80.0 per cent recoveries) occurred in those dogs having intermediate plasma thiamine levels. None of these dogs were given fluids to replace the blood withdrawn, and one could not expect the high thiamine animals to live without transfusion when half or more of their circulating blood volume was removed. The extensive pathologic changes in the low thiamine group as exemplified by the intestinal hemorrhage probably prevented their responding to thiamine alone.

In most cases the plasma thiamine level rose as the animal went into shock. This point is of importance when considered in the light of work to be discussed later.

It was mentioned before that the intermediate group of dogs, having normal plasma thiamine levels, were

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1. Tonutti, E., and Wallraff, J.: Ztschr. f. micro.-ant. Forsch. **44**: 532, 1938.
2. Blotevogel, H., and Tonutti, E.: Klin. Wchnschr. **18**: 471, 1939.
3. Govier, W. M., and Greer, C. M.: J. Pharmacol. & Exper. Therap. **72**: 317, 1941.
4. Govier, W. M., and Greer, C. M.: J. Pharmacol. & Exper. Therap. **77**: 321, 1941.
5. Govier, W. M.: J. Pharmacol. & Exper. Therap. **77**: 40, 1943.

benefited by thiamine therapy. One explanation of this fact would be that the animals' own tissue thiamine became ineffective. I have also mentioned that thiamine must be phosphorylated to diphosphothiamine or cocarboxylase in order to be effective as a coenzyme in pyruvate metabolism. In the tissues there is probably an equilibrium between thiamine (and/or its monophosphate) and cocarboxylase as shown in this reaction:

Thiamine + phosphate ⇄ cocarboxylase

Under normal conditions most of the thiamine is in the phosphorylated form, but it seemed possible that under abnormal conditions, such as in shock, the cocarboxylase might become dephosphorylated, thus shifting the equilibrium to the left and concomitantly reducing the amount of metabolically "active" thiamine. Ochoa [6] has shown in vitro that under anaerobic conditions such breakdown of cocarboxylase does occur, probably by means of a phosphatase. We have confirmed his results.[7] Both cocarboxylase and total thiamine were determined in the skeletal muscle, liver and duodenum of dogs before and after shock, and after thiamine therapy. Dephosphorylation of cocarboxylase occurred in 92 per cent of the cases in muscle, in 69 per cent of the cases with duodenum and in 46 per cent of the liver samples. The magnitude of the dephosphorylation was variable, there being some tendency for more dephosphorylation to occur in dogs which went into shock with relatively small amounts of bleeding.[8] These results have been confirmed by Alexander.[9]

Thus these animals, although well supplied with thiamine, were in a sense vitamin B_1 deficient, since their thiamine was in a form which was useless in tissue metabolism. Administration of more thiamine in large doses to these dogs as treatment resulted in resynthesis of cocarboxylase. Large doses of thiamine are probably required in order to raise the intracellular concentration of thiamine so that resynthesis may occur, even when oxidative processes supplying energy for phosphorylation of thiamine are greatly reduced.

In an effort to determine whether or not similar breakdown of cocarboxylase would occur in anoxia other than that of shock, a number of dogs were allowed to breathe oxygen-nitrogen mixtures containing 10 per cent oxygen.[10] The same breakdown of cocarboxylase occurred. It would thus appear that anemic anoxia and anoxic anoxia both produce a tissue anaerobiosis which results in breakdown of cocarboxylase.

It has been mentioned that as a dog goes into shock the animal's plasma thiamine level rises. This can now be explained by diffusion of free thiamine from tissues to circulating plasma after cocarboxylase is dephosphorylated, since thiamine is more diffusible than cocarboxylase.

There is no reason to suppose that cocarboxylase is the only coenzyme which may be broken down in anoxic conditions or that shock and anoxic anoxia should be the only conditions in which the coenzymes should be broken down. Greig has recently shown that in shock a pronounced breakdown occurs in coenzyme I, the nicotinamide containing coenzyme which is essential for the metabolism of many substrates, such as lactate, malate, betahydroxybutyrate and diphosphoglyceraldehyde, and that resynthesis of the coenzyme occurs after administration of nicotinic acid.[10] She has also demonstrated a similar breakdown in alloxazine adenine dinucleotide (flavine adenine dinucleotide), the riboflavin containing coenzyme which is essential for the reoxidation of reduced coenzyme I and for the metabolism of amino acids. Alloxazine adenine dinucleotide is resynthesized in the animal in shock when riboflavin is administered.[10]

With reference to coenzyme breakdown in other conditions than those of shock and anoxic anoxia, it may be said that we have been able to show that experimental coronary ligation is accompanied by considerable destruction (up to 80 per cent) in coenzyme I.[11]

Recently Long and his co-workers [12] have noticed accumulation of amino acids in the peripheral blood in shock, a finding which would be explained by Greig's demonstration of breakdown in riboflavin-containing coenzymes. In in vitro experiments this group found that the respiration of liver slices from shocked animals was much less than that of controls and that the addition of a coenzyme-containing boiled liver extract increased the oxygen consumption of mildly shocked tissues. One may consider this to be additional evidence that the replacement of coenzymes is of great importance in the therapy of shock.

The facts demonstrating that coenzymes are broken down in shock have been admirably summarized by Greig [10] in her recent paper, and I quote her summary:

1. The resistance of dogs to shock was found to be significantly greater in those animals having high plasma thiamine levels than in those showing low plasma thiamine values.

2. Animals which were susceptible to shock showed a diffusion into the plasma of large amounts of thiamine, indicating a breakdown of tissue cocarboxylase.

3. Cocarboxylase was found to decrease in muscle, liver and duodenum in animals subjected to hemorrhage and to anoxic anoxia.

4. Some degree of correlation was found between the amount of bleeding necessary for the onset of shock and the degree of destruction of cocarboxylase.

5. Coenzyme I and alloxazine adenine dinucleotide decrease in brain, muscle and liver in shock.

6. Dogs requiring more than average amounts of bleeding to go into shock showed less destruction of tissue coenzyme I than did dogs which went into shock with small amounts of bleeding.

It will be obvious to most that the prevention and treatment of coenzyme breakdown is of the utmost importance if normal metabolism or, in fact, any metabolism is to be maintained in anoxic conditions. In view of the recent work demonstrating well defined pathologic findings in thiamine deficiency [13] it is apparent that a cell which is deprived of its coenzymes does not merely stop metabolizing foodstuffs but actually dies. To put it another way, one may say that, to a cell, life and metabolism are synonymous. Under the conditions of the experiments discussed here, the administration of vitamins in large doses has been found of great value in the preservation of tissue coenzymes in anoxic conditions. I do not mean to imply, however, that other means of therapy are unimportant, and certainly in the therapy of shock one should employ all of the remedies available.

6. Ochoa, S.: Biochem. J. **33:** 1262, 1939.
7. Govier, W. M., and Greig, Margaret E.: J. Pharmacol. & Exper. Therap. **79:** 240, 1943.
8. Greig, Margaret E., and Govier, W. M.: J. Pharmacol. & Exper. Therap. **79:** 169, 1943.
9. Alexander, B.: J. Clin. Investigation **23:** 259, 1944.
10. Greig, Margaret E.: J. Pharmacol. & Exper. Therap., to be published.
11. Govier, W. M.: Am. Heart J., to be published.
12. Engel, F. L.; Winton, Mary G., and Long, C. N. H.: J. Exper. Med. **77:** 397, 1943. Russell, J. A.; Long, C. N. H., and Engel, F. L., ibid. **79:** 1, 1944. Engel, F. L.; Harrison, H. C., and Long, C. N. H., ibid. **79:** 9, 1944. Russell, J. A.; Long, C. N. H., and Wilhelmi, A. E., ibid. **79:** 23, 1944.
13. Follis, R. H., Jr.; Miller, M. H.; Wintrobe, M. M., and Stein, H. J.: Am. J. Path. **19:** 341, 1943.

ADULT NEEDS OF VITAMINS A AND C

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It is still as true as ever that the diet can and should be a sufficient source of vitamins A and C for all the healthy human needs. Even with the difficulties of the current high cost of food, with restrictions imposed by food rationing and with shortages in the market, it is possible for many people to meet the best of standards of securing these vitamins as well as the other nutrients in a diet. On the other hand, clinical experience in recent months, as before, convinces me that a very considerable number of adult Americans, whether urban or rural, are not securing a sufficient amount of vitamin C, or ascorbic acid, for the best health. The increased cost of citrus fruit is less frequently a cause of this deficiency than the failure to realize the urgent necessity for the use of those foods which contain ample amounts of vitamin C. The problem is essentialy educational.

In urging more liberal use of fruits and vegetables, the two chief sources of ascorbic acid, it is necessary to know the minimum daily requirement of this vitamin for the healthy adult. The standard accepted by the United States Food and Drug Administration is 30 mg. That recommended by the Food and Nutrition Board of the National Research Council is 75 mg. There are careful scientific workers who still defend both extremes of this rather wide difference. Probably the reason for the divergence of opinion is to be found fundamentally in two circumstances. The first is that we still lack a consensus as to the criterion for a beginning deficiency. What chemical manifestations may we depend on as evidence that a person is getting just a bit less than the optimum amount of ascorbic acid regularly? Must the person show frank scurvy with its changes in periosteum, joints, subcutaneous hemorrhages and loosening of the teeth, or is the occurrence of edematous gums and the low grade inflammation spoken of as gingivitis adequate evidence for deficiency? Until agreement is achieved on this matter, there will be wide differences of opinion about the minimum required dose.

A second difficulty is the consequence of the great lability of ascorbic acid particularly in easy oxidation by the air. Diets made up from known amounts of food, carefully analyzed for ascorbic acid content, may still be found seriously inadequate, owing to the manner of preparation of the food and especially to its being held after preparation, exposed to the air for considerable periods of time before it is eaten. One of the very interesting recent bits of evidence on this point is a study by United States Army nutrition chemists of the status of a group of soldiers who are subsisting on an army ration which is approved and which, on paper, contains a liberal excess of ascorbic acid. Nevertheless the examination of blood and urine specimens from these soldiers can be interpreted only as evidence that a very significant proportion of the subjects were not in a state of saturation with the vitamin. Such a state of saturation should have been produced if they were really eating the amount of ascorbic acid which the diets are calculated to contain. The data do not indicate a scandal involving the source of the food but merely that food assays for such a purpose would have to be based on samples taken at the time that the food is eaten. Some students of ascorbic acid need feel that no one who does not use citrus fruits or tomatoes liberally can have a really adequate amount of vitamin C.

Observations made on persons in highly variable circumstances are tending to an agreement that the daily intake of ascorbic acid which will really prevent gum disease must be of the order of magnitude of 75 mg. each day. Amounts as small as 25 or 50 mg. are distinctly ineffective. In order to secure this amount of ascorbic acid the diet is best made up with a variety of fresh fruits and vegetables, recognizing, however, that cooked vegetables supply some vitamin C also. If one was to plan on getting all his vitamin C from citrus fruit juice it would probably require an 8 ounce glass daily to be certain of adequate amounts. If he was to depend on tomato juice he would have to insist on at least 1 pint daily. For those whose diets must be limited for any reason to small amounts of these and other fresh fruits and vegetables it is probably wise that by prescription they should be provided with from 50 to 75 mg. of ascorbic acid in tablet form to be taken daily. With the recent improvement in manufacturing details, it is now no more expensive to get the pure crystalline vitamin in tablet form than to secure it from foods, although one must never forget that the foods themselves provide other important nutrients in addition to the vitamin C.

On planning the treatment for a patient obviously desaturated in ascorbic acid one needs to know how rapidly he may prescribe vitamin C without significant loss of this material through the urine. Recent careful trials of graded doses have proved that 500 mg. of ascorbic acid may be given orally per dose with efficiency in severely desaturated patients. This may be done at least three times daily. For most desaturated patients such a total of 1,500 mg. in one day will accomplish saturation of the body, and this will be shown by urinary excretion of a part of the later dose. If prolonged desaturation of ascorbic acid has preceded the treatment it may be necessary to administer the 1,500 milligram dose daily for two or even three days before saturation is achieved. Exceptions may be found in leukemias and certain metabolic disturbances. However, once the plasma vitamin C has been brought above 0.8 mg. per hundred cubic centimeters the administration of 100 mg. daily of ascorbic acid should be more than enough to keep the body saturated.

Deficiencies of vitamin A are less easily identified in the individual case. On postmortem examination, changes in the respiratory and excretory epithelium as well as in the skin may all be grouped under the term of keratinizing metaplasia. These changes probably represent the rather advanced stages of deficiency. Recent studies of the ability of different daily intakes of vitamin A to maintain a stable and normal light adaptation by human adults would indicate that for the adult not much less than 5,000 units daily is required. It is not possible at this time to state what would be the first consequences of a continuous but slight lack of this vitamin. Whether this would be expressed as an increased susceptibility to respiratory infections, disorders of the skin or slight disturbances of vision are all debatable points. The green colored vegetables, car-

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rots, sweet potatoes and tomatoes, the dairy products and liver carry such abundant supplies of this vitamin that there is little reason why anybody on a normal and varied diet should have a deficiency of vitamin A. The vegetable sources provide carotene or provitamin A, which the body under normal circumstances readily enough converts into vitamin A for its own uses.

If for any reason an individual diet must be highly restricted as to the succulent vegetables and the dairy products, then it is wise for a physician to prescribe amounts up to but not exceeding 5,000 international units of vitamin A daily. This is easily accomplished by any one of a number of the preparations containing vitamin A alone, the fish liver oil concentrates, or in special capsules containing vitamin A with other vitamin materials.

DETECTION AND TREATMENT OF SEVERE ATYPICAL DEFICIENCY DISEASE

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The very essence of good medical practice is correct diagnosis followed by persistent and adequate therapy. Most physicians recognize the so-called textbook case of deficiency disease and know how to treat it, but to date the practicing physician has been taught little about the very early case, the case with asymmetrical lesions or the very severe case with atypical lesions. This paper is devoted exclusively to the last group, since it is the type of case most difficult to diagnose and the one most likely to be fatal if proper therapy is not applied.

Many physicians believe that it is possible merely to look at a patient and by some magic process know that he has nutritive failure. Yet, with all the experience we have had, we still find deficiency disease more difficult to diagnose than diabetes, tuberculosis, anemia, leukemia or any other general medical disease. Perhaps in no other disease complex is there so much variation in the individual patient's pattern of symptoms as in nutritive failure. The average patient with nutritive failure, when first seen by the physician, has a mixture of diseases arising from a deficiency of many nutrients, and most, and sometimes all, his symptoms are ill defined rather than clearcut. During the long period of time that deficiency diseases are developing, deep seated changes occur in the cells. These changes vary from person to person, and the disturbances arising from them are different in every case. Compensating bodily mechanisms conceal the deficiencies for varying periods of time, but when they are of such degree and sufficiently protracted, lesions may appear. If these lesions are characteristic and if the physician has nutritive failure in mind, he usually makes a correct diagnosis. Many patients, however, do not have such definite criteria, and it is with such cases that this paper is concerned. In the brief time that we have at our disposal, it is perhaps best to present a few representative cases and discuss their diagnosis and therapy:

CASE 1.—*History.*—B. W., a Negro boy aged 5 months, was returned to the hospital in June 1940 because of diarrhea and refusal to eat. This child was born three and one-half months premature and remained in an incubator four months. During this time he was given a formula of evaporated milk, water and Karo syrup. Orange juice and cod liver oil were first added when he was 3 months of age. He took these foods well while in the hospital and for two weeks after he went home. He then developed severe pneumonia, which lasted one week. During this period he took less than half the food offered and for the next two weeks refused to take a large part of each feeding. Suddenly he began having ten to twelve watery stools daily. Camphorated tincture of opium helped little in controlling them. The day after the diarrhea developed he refused all his food and on admission to the hospital had eaten no food for three days. He still continued to have frequent small, watery stools.

Physical examination revealed that the infant was fretful, pale, weak, dehydrated and obviously severely ill. He cried feebly but almost constantly. His tongue was fiery red at the tip and over the upper surface except for small grayish ulcerated areas over the affected portion. On the undersurface near the tip there were two ulcers, a large one at the left and a smaller one at the right, both covered by a thick grayish white membrane (fig. 1). A smear from this membrane showed myriads of organisms indicative of Vincent's infection.

Laboratory Examination.—The B. E. S. test [1] of the urine was strongly positive. No other laboratory determinations were made.

Since the child was obviously in a critical condition, within a few minutes after admission he was given, by means of a medicine dropper, the first of a formula containing niacin amide. During the first hour 60 cc. of this formula, including 50 mg. of niacin amide, was swallowed. Within four hours he was better, and 50 mg. of niacin amide was added to 180 cc. of the next formula. He took this without difficulty. Twelve hours later the diarrhea ceased. On the second day 50 mg. of niacin amide was given again, and he took the whole day's formula. By this time the tongue obviously was healing. Each day thereafter he took 50 mg. of niacin amide and all his formula. At the end of his sixth hospital day his tongue was normal in appearance, and we gave him 30 cc. of orange juice. He was discharged the next day to his home, and his mother was given instructions as to how to feed him. She succeeded in getting him to take all the food offered. Four years later finds him in excellent health and growing normally.

In this premature infant the history of a severe infection, followed by a greatly reduced food intake, suggested to us that the diarrhea and ulcerated areas on the tongue might be due to a deficiency of some nutrient. The administration of 50 mg. of niacin amide was followed by prompt cessation of the diarrhea, healing of the glossitis and return of his appetite.

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Miss Monette Springer, R.N., did most of the nursing care and obtained the specimens. Mrs. Sue Sanders and Mrs. Thelma Thomas made the chemical analyses.

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL by the omission of cases 7 and 8. The complete article may be found in the reprints, which will be sent on request to the authors.

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The tremendously heavy expenses of the general nutrition study have been borne by grants from a number of philanthropic persons, foundations and commercial concerns, without which this study could not have been made. The necessary expense of frequent observations of these patients in their homes and in the clinic over a long period of time has been defrayed by grants from the Nutrition Foundation and from E. R. Squibb and Sons.

1. The B. E. S. test, the colorimetric method described by Beckh, Ellinger and Spies, is of clinical importance in detecting certain abnormal pigments in the urine of persons with "subclinical" and clinical states. It is simple and useful but not pathognomonic. Beckh, W.; Ellinger, P., and Spies, T. D.: Porphyrinuria in Pellagra, Quart. J. Med. **6**: 305-319 (July) 1937.

CASE 2.—*History.*—N. C., a white woman aged 23, was brought to the Nutrition Clinic in a state of mental confusion by her mother in June 1941.

The patient was so apprehensive and agitated that we found it futile to try to question her or to do a complete physical examination. From the mother we learned that the patient had been in good health until she was 21 years of age. At that time she married but two months later was deserted by her husband. Before returning to the home of her parents, she became "depressed, lost interest in everything, lost her appetite and went down to skin and bone." Three months later she behaved so peculiarly that the neighbors and family became seriously disturbed. She hid in her room when neighbors came to call. She refused meals because she thought her food was being poisoned. She refused to leave her room except at night, when she wandered from room to room. During her nocturnal wanderings, her mother observed, she ate crackers, bread, butter and sugar but never any other type of food. Her parents became alarmed about her condition and called a physician, but she locked herself in her room and refused to see him. Soon after, her mother said, she became "delirious" and openly threatened to kill herself or any one who tried to interfere with her. The physician was called again, and she

Fig. 1 (case 1).—The tongue was red over the tip, the lateral margin and the undersurfaces. Note two ulcerations, the larger on the left. The membrane covering these lesions was grayish white in appearance and contained myriads of Vincent's organisms.

was forcibly sent to a hospital. During her stay in the hospital she never smiled or spoke and became annoyed when her mother or any one tried to persuade her to eat. She was discharged after two months in the hospital. A neighbor whose mental symptoms had disappeared following treatment by us suggested that the mother bring the girl to the Nutrition Clinic.

Examination of the skin, mouth and eyes showed no stigmas of vitamin deficiency disease, and we were uncertain as to whether or not her mental symptoms arose from the lack of some nutrient.

Laboratory Examination.—The red blood cell count was 3.1 million, hemoglobin 11.9 Gm. (77 per cent), white blood count 8,200. The pantothenic acid [2] content of her blood averaged 0.07 microgram per cubic centimeter of whole blood, contrasted with the blood of normal subjects, whose values range from 0.13 to 0.31 microgram per cubic centimeter of whole blood. Her blood contained 0.28 microgram of riboflavin [3] per cubic centimeter of whole blood as compared with the normal persons in this laboratory, who range from 0.29 to 0.56 microgram per cubic centimeter of whole blood. Repeated determinations of the concentration of ascorbic acid in her plasma [4] varied from 0 to 0.1 mg. per hundred cubic centimeters in contrast with the desired level of 0.7 to 1.1. The urine was negative for albumin, sugar, cells and casts. The B. E. S. test was slightly positive in the beginning and gradually became negative. When the urine was tested for nicotinic acid [5] and similar compounds before treatment it was negative. One hour following therapy it became positive. No measurable amount of thiamine was excreted in the urine.[6]

Suspecting that she had been on a high carbohydrate diet for a long period of time and certain that she had been on a poor diet for six months prior to admission, we were led to prescribe 1,000 mg. of niacin amide daily. The following day she was calmer, less apprehensive and more cooperative. At this time we prescribed a 4,000 calory, high protein diet. A week later improvement was obvious to all. She was friendly and cooperative, and she answered our questions willingly, although her responses were retarded and she made no attempt to initiate conversation. Her appetite had improved, and since the third day of treatment she had eaten all the food prescribed. The following week she offered to help her mother with the housework and went shopping with her. At the end of six weeks she had gained 12 pounds (5.4 Kg.) in weight and appeared to be perfectly normal. The niacin amide was discontinued at this time. Two months later she began working in an office as a file clerk. Six months later she divorced her husband and subsequently remarried. She now has a normal, healthy child, takes care of her house and child, and does secretarial work for her husband two afternoons a week.

Following an emotional disturbance, this young woman, who had always eaten a high carbohydrate diet, lost her appetite and subsisted on a grossly unbalanced and inadequate diet. Within three months she developed mental symptoms so severe that she was hospitalized. When first seen by us, two months after her discharge from the hospital, she showed no stigmas of deficiency disease other than severe mental symptoms frequently associated with pellagra. The history of an extremely inadequate diet led us to suspect that these symptoms might be nutritional in origin. The administration of 1,000 mg. of niacin amide was followed by dramatic improvement in the mental symptoms and appetite. After six weeks on therapy she gained weight and strength and appeared perfectly normal. During the five years that have elapsed since she was treated she has lived a normal, happy life and has had no recurrence of symptoms.

CASE 3.—*History.*—Mrs. N. S., white, aged 67, came to the Nutrition Clinic in March 1943 complaining of an intense burning sensation of the soles of the feet which had persisted for over a year. She had bought various types of shoes and had consulted various physicians and two chiropodists without relief. The burning had become so severe that she could not keep the covers over her feet on the coldest night. She could sleep little and became nervous, restless and depressed. During the winter she had frequent colds, and after each cold the burning of her feet increased and she became more depressed.

Physical examination showed that the patient was well developed and 20 pounds (9 Kg.) overweight; otherwise it was negative. Neurologic examination showed that the soles of the feet were extremely sensitive to stroking. Fine passive

2. Spies, T. D.; Stanbery, S. R.; William, R. J.; Jukes, T. H., and Babcock, S. H.: Pantothenic Acid in Human Nutrition, J. A. M. A. **115**: 523-524 (Aug. 17) 1940.

3. Snell, E. E.; Strong, F. M., and Peterson, W. H.: A Microbiological Assay for Riboflavin, Indust. & Engin. Chem. (Analyt. Ed.) **11**: 346 (June) 1939.

4. Mindlin, R. L., and Butler, A. M.: Determination of Ascorbic Acid in Plasma, J. Biol. Chem. **122**: 673-686 (Feb.) 1938.

5. Vilter, S. P.; Spies, T. D., and Mathews, A. P.: A Method for the Determination of Nicotinic Acid, Nicotinamide, and Possibly Other Pyridine-like Substances in Human Urine, J. Biol. Chem. **125**: 85-98 (Sept.) 1938.

6. Schultz, A. S.; Atkin, L., and Frey, C. N.: A Fermentation Test for Vitamin B_1, J. Am. Chem. Soc. **59**: 2457, 1937.

changes in the position of the toes were not appreciated; however, she named large displacements properly.

Laboratory Examination.—The red blood cell count was 4.12 million, hemoglobin 13.7 Gm. (89 per cent), white blood cell count 7,500. There was no ascorbic acid in the plasma. The urine was negative for sugar, albumin, cells and casts. The B. E. S. test was negative, and nicotinic acid was low although the exact amount was not determined. The twenty-four hour excretion of thiamine in the urine, estimated by the fermentation test, was 0.01 mg., whereas the excretion of persons on a good diet is 0.1 mg. or above. Following the administration of sterile saline solution the twenty-four hour thiamine excretion remained unchanged. Following the intravenous administration of a 100 mg. test dose of thiamine hydrochloride, 90 per cent of the thiamine was retained in contrast with a retention of some 60 per cent or more when tissue stores are adequate.

When questioned about her diet, she told us that she was especially fond of bread, potatoes, desserts and candy. Until her husband died two years previously, she had prepared a varied, well balanced diet for him and had eaten an adequate though somewhat high carbohydrate diet herself. Following the death of her husband she ate irregularly and usually ate only the foods she liked best—bread, butter, desserts and candy.

Because of the history of an unbalanced, high carbohydrate diet for two years, we decided to try a therapeutic test for thaimine deficiency despite the fact that the neurologic examination showed no clearcut evidence of nutritional neuritis. Accordingly, she was given 10 cc. of sterile saline solution on three consecutive days without therapeutic effect. The following day she was given 100 mg. of thiamine hydrochloride intravenously. That night she had no burning of the feet and slept more than she had any night in months. Since she was overweight, an 1,800 calory diet was prescribed and an injection of 50 mg. of thiamine was given weekly for four weeks. She has followed the prescribed diet for two months and has lost 5 pounds (2.3 Kg.) in weight. The burning of the patient's feet has not returned, she sleeps well, she is more active than she has been for over a year and she is no longer nervous or depressed.

Following the ingestion of a poorly balanced, high carbohydrate diet, this patient developed severe burning of the feet, and, because of this, as well as of nervousness and depression, she could sleep but little. Repeated injections of sterile isotonic solution of sodium chloride had no beneficial effect, but she was completely relieved of symptoms by repeated injections of 50 mg. of thiamine hydrochloride intravenously, with the result that she has become her normal self and is no longer nervous or depressed.

CASE 4.—*History.*—K. B., a white man aged 63, came to the Nutrition Clinic in April 1942 complaining of pain and of failing vision of the left eye.

The patient said that he had been in excellent health and had eaten a liberal diet until a year before, when he and his wife separated. He began eating in restaurants despite his dislike for the way the food was prepared. He voluntarily restricted his diet to bread, sandwiches, cake, pie, fruit, soft drinks and coffee. He remembers that he drank no milk and seldom ate meat or vegetables. Within two months he lost 15 pounds (6.8 Kg.) in weight, noticed that he tired easily and for the first time in his life had insomnia. Six months later his right eye began burning and itching, and it felt as if it had "a scum" over it. He noticed that it appeared "bloodshot." He was working in a sawmill at the time and thought that perhaps his eye had been injured by sawdust. He went to a physician who prescribed an eye wash, but the eye grew progressively worse. It began to "water" more and more, and in bright light the pain was so intense that he could not keep it open. In vain he bought dark glasses to relieve his photophobia. He was certain that he would lose this eye, so he gave up his job and for a month sat at home brooding about his eye and worrying over what would become of him when he had used up his small savings, became very depressed and thought of suicide for relief. He lost his appetite and for two weeks prior to coming to the clinic ate nothing but crackers, soup and coffee. He came to the Nutrition Clinic at the suggestion of a neighbor whose eyes had improved following treatment.

Examination of his eyes showed that the left eye was normal except for slight redness of the conjunctivas, whereas the right eye showed thickening and intense redness of the conjunctivas and capillary dilatation most pronounced at the inner canthus and extending in triangular formation to the cornea, on which there was a small ulcer. He had difficulty keeping the eye open and could distinguish light from dark but could not read or distinguish colors with the left eye. Thorough physical examination revealed no other lesions and no symptoms attributable to nutritive failure except loss of weight, dizziness, weakness, nervousness and depression.

Laboratory Examination.—The red blood cell count was 4.50 million, hemoglobin 14.6 Gm. (94 per cent), white blood cell count 7,600. Determination of the riboflavin content of the blood before treatment was 0.28 microgram per cubic centimeter of whole blood in contrast to values ranging from 0.29 to 0.56 microgram per cubic centimeter in normal persons. Ascorbic acid was absent from the plasma. The urinary excretion of nicotinic acid and thiamine was reduced. The B. E. S. test was negative. Tests for sugar, albumin, cells and casts likewise were negative. Gastric analysis showed in the fasting specimen no rennin (L. Michaelis technic) or pepsinogen (Mett's tubes) and no hydrochloric acid; total acidity was 6 degrees. Fifteen minutes after histamine injection, free hydrochloric acid was 0, total acidity was 12 degrees.

The patient was given intravenous injections of 20 mg. of riboflavin daily. Three days after treatment was initiated the redness of the conjunctivas had decreased, the burning and itching had stopped, photophobia had disappeared, there was less engorgement of the capillaries extending into the cornea, and the ulcer had begun to heal. When his eye began to improve, his desire for food returned, with the result that he ate a great deal more food than he had been eating. Two weeks after treatment was initiated his eye appeared normal to gross examination, although the corneal scar was evident by slit lamp examination. The riboflavin was discontinued at this time, and he was given 10 mg. of thiamine daily by mouth for four weeks and instructed in regard to what foods he should eat.

Almost as dramatic as the improvement in the patient's eye was the change in his personality. Within two weeks he changed from a nervous, depressed man to whom life was a burden to a happy person who looked forward to his job. He went back to work the day after the injections of riboflavin were discontinued. At the present time his weight is normal, he feels well, and recently he was promoted to foreman in the lumber yard in which he works.

Although unilateral ocular lesions are common in riboflavin deficiency, this man was incorrectly treated because his physician did not realize that the severe involvement of the right eye, his loss of weight and strength, and mental depression might have arisen from nutritive failure. Twenty mg. of synthetic riboflavin daily was administered intravenously for two weeks. At the end of this time all the eye symptoms had disappeared, his appetite and strength had returned and he went back to work. The administration of 10 mg. of thiamine for four weeks resulted in further improvement in his feeling of strength and well-being. He now eats a good diet and has had no return of symptoms.

CASE 5.—*History.*—G. B., a white girl aged 17 years, came to the Nutrition Clinic in June 1941 complaining of loss of weight and strength and of nervousness.

She had eaten a liberal, well balanced diet and had been in excellent health until she began working as a clerk in a grocery store a year previously. At this time she decided she was overweight and began reducing her food intake. She drank "coffee for breakfast" and had "a coca cola and candy bar for lunch." She usually stayed in town for the evening and for dinner ate only a sandwich and a piece of cake. She lost weight and strength rapidly and within six months began having burning and pain in the stomach and occasional vomiting. By this time she was sleeping but little and was so nervous that she gave up her position one month prior to the time we first saw her. She said that noises made her nervous and that when she heard the radio or the voices of children she put her fingers in her ears to shut out the sound. At times she heard voices, bells ringing or knocking at the door, although she knew it was "only imagination." She would not stay in the house alone because she was afraid she was going to die or that some one would come and "get" her. At night she had anxiety dreams and refused to sleep without a light. She could not remember what she said to people or what they said to her. She complained of being cold and feeling "dead." Several times in each twenty-four hours she had smothering spells and palpitation associated with fear of death.

Physical examination showed that she was pale and underweight. From her facial expression it was obvious that she was extremely nervous and apprehensive. She cried frequently while she was talking to the physician but said that she did not know why she was crying. Her skin felt cold to the touch and had a mottled blue appearance. Her pulse rate at times was 130 to 150. The electrocardiogram was normal except for increased rate. Otherwise the physical and neurologic examinations were negative.

Laboratory Examination.—The red blood cells numbered 3.56 million, hemoglobin 11.5 Gm. (75 per cent) and white blood cells 6,500. Ascorbic acid was absent from the plasma. In order to study the blood entering and leaving the brain[7] we took samples from the carotid artery and the jugular vein. These samples were examined for oxygen, sugar and lactic acid. The average difference between venous and arterial oxygen was 5.35 volumes per cent contrasted to 7.43 volumes per cent in normal subjects. Simultaneous glucose determinations of venous and arterial blood showed a utilization of 6.9 mg. per hundred cubic centimeters of blood compared to 14.6 mg. per hundred cubic centimeters in normal blood. There was no difference between the lactic acid content of venous and arterial blood. Examination of the urine showed no sugar, albumin, cells or casts. The B. E. S. test was slightly positive. The excretion of nicotinic acid in the urine was below normal levels, and thaimine was absent. Gastric analyses showed no free hydrochloric acid, pepsinogen or rennin even after histamine injection.

The intravenous injection of sterile saline solution on three consecutive days was not followed by subjective or objective change. On the fourth day she was given 50 mg. of thiamine hydrochloride in sterile saline solution intravenously. Within an hour her whole appearance had changed; she was smiling and calm. Her pulse rate was down; her skin appeared and felt normal. She went home, and when she came to the clinic the next morning she said she had slept ten hours and felt more rested than she had for months, she felt warm again, and her desire for food had returned. She was given another 50 mg. injection of thiamine and instructed to eat a 3,000 calory diet high in protein and vitamins, supplemented with 2 ounces (60 Gm.) of dried brewers' yeast powder mixed with 6 ounces (180 cc.) of tomato juice. Within two weeks she gained 10 pounds (4.5 Kg.) in weight, the vomiting stopped, the nervous symptoms disappeared and she returned to work. On the numerous occasions on which we have seen her since, her heart rate has not been increased and she has had no more palpitation. She has continued to eat the diet prescribed, and at the present time she is working in a defense plant and is in excellent health.

This girl voluntarily reduced her food intake in order to lose weight. She chose an unbalanced diet and lost weight and strength and developed pseudohallucinations, smothering spells, nervousness and palpitation associated with the fear of impending death. Repeated injections of sterile isotonic solution of sodium chloride failed to give relief. The intravenous administration of 50 mg. of thiamine hydrochloride was followed by dramatic relief of all her symptoms. She started eating a well balanced diet high in calories, protein and vitamins, supplemented with dried brewers' yeast and tomato juice. At the present time she is in excellent health and is working every day.

CASE 6.—*History.*—B. V., a Negro woman aged 44, admitted in June 1942, was brought to the hospital on a litter in an ambulance by her niece, who had come from a nearby town to visit her and found her very ill. The niece could give no information about the patient except that she had lived alone following the death of her husband two years previously.

Physical examination revealed that the patient was underweight, was irrational and mumbled almost constantly. She had delusions and was disoriented as to time and place. She had both visual and auditory hallucinations. She frequently thought snakes were biting her and that people were trying to kill her. Her tongue was swollen and slightly red at the tip. The lips were reddened, cracked and dry. She vomited water every time she took a drink, and within the first hour after she was admitted she passed three watery, foul smelling stools. The skin was dry and rough, but there were no lesions except for one on the left side of her neck (fig. 2). This area, which was 6.5 by 8.5 cm., was red, swollen and covered with vesicles and bullae, many of which subsequently ruptured.

Laboratory Examination.—Red blood cells numbered 3.52 million, hemoglobin was 12.8 Gm. (83 per cent) and the white blood cell count was 12,800. Ascorbic acid was absent from the plasma. Examination of the urine showed no sugar, a slight trace of albumin, a few cells and casts. Tests for thiamine and nicotinic acid were negative. The B. E. S. test was strongly positive.

Although the patient had a minimal degree of pellagrous involvement of the mucous membrane and only a small unilateral pellagrous skin lesion, because of her obvious loss of weight, her severe mental symptoms and our experience of having seen small unilateral lesions before, we made a positive diagnosis of niacin amide deficiency and instituted therapy without any information in regard to her past diet. Soon after she came under our care, 2,000 cc. of isotonic solution of sodium chloride containing 500 mg. of niacin amide was injected subcutaneously. During the night she changed from an irrational and screaming person to one who was quiet and cooperative. A slight redness on the tip of the tongue was now replaced by a grayish white color. Even before we offered her food, she requested it. That day she took a 3,000 calory diet and six 100 mg. doses of niacin amide. On the third hospital day she was completely oriented and ate a 4,000 calory diet with great relish. Niacin amide in the same amount and the diet were continued for one week. By that time she had gained in weight, she was strong enough to walk around the ward, the lesion on her neck had desquamated and begun to heal, and her mind was perfectly clear. Three days later she was discharged from the hospital and went home alone on the street car.

Before leaving the hospital, however, she told us that her husband had died two years previously and that thereafter

7. Himwich, H. E.; Spies, T. D.; Fazekas, J. F., and Nesin, S.: Cerebral Carbohydrate Metabolism During Deficiency of Various Members of the Vitamin B Complex, Am. J. M. Sc. **199**: 849-853 (June) 1940.

she had lived alone. Her only income during the past two years had been what she had earned doing laundry work. She seemed to think her diet had been adequate prior to the death of her husband, and she was certain that she had not had any serious illnesses. Following the death of her husband, however, she had no money except what she earned by occasionally doing laundry work, so she restricted her diet to corn bread, biscuits, salt pork and dried beans. She liked these foods, and they were relatively inexpensive. Four months prior to admission to the hospital she said that she had severe influenza and pneumonia, and from that time on her appetite had been poor and she had been too weak to take in washing, with the result that she had very little money. She began eating only oatmeal, partially because it was inexpensive but chiefly because she was weak and found it easy to prepare. One month later for the first time she noticed severe pains in her stomach, and she became nauseated and had frequent vomiting and occasional

Fig. 2 (case 6).—Note irregular shaped area of pellagrous dermatitis. It is well demarcated from the adjacent normal appearing tissue. The reddish border does not show in black and white photograph. No other clinical evidence of pellagra visible in the form of either dermatitis or mucous membrane lesions.

watery stools. These symptoms persisted, and six weeks later a spot appeared on her neck, but she said she paid no attention to it despite the fact that it burned and itched. Each day she realized that she was weaker than the day before. She became so forgetful that she thought her mind "was leaving" her. She refused to take food the neighbors offered her because she was afraid of being poisoned, and she did not go to see a doctor for fear of being lost. She didn't wish to let her relatives know of her plight, as she thought they would think her "crazy headed." She remembered nothing that had happened for a week prior to her admission to the hospital.

Within two weeks after she was discharged from the hospital she began working in a bag factory. Her income is adequate, she has gained in weight and strength, and she continues to eat a liberal diet and volunteers that she is in excellent health.

Without a nutrition history, which was unobtainable in this case, and in the absence of clearcut diagnostic lesions, a diagnosis of pellagra is difficult. The diagnosis in this case was based on the patient's obvious loss of weight, her severe mental symptoms and the appearance of the small unilateral skin lesion on the neck. The correctness of the diagnosis and the adequacy of therapy were demonstrated by the dramatic improvement which followed the parenteral injection of 500 mg. of niacin amide. Overnight she changed from a critically ill, mentally diseased and agitated person to one who was completely oriented and calm. Therapy was continued for a week, during which time her appetite became enormous, her strength returned and all her symptoms disappeared. She returned home alone a week after she was admitted to the hospital and subsequently returned to work.

CASE 9.—*History.*—Mrs. O. J., a white woman aged 67, came to the Nutrition Clinic in June 1941 complaining of "nervousness." She gave a history of having had perfect health until she was 32 years of age, at which time a number of emotional problems concerning one of her daughters arose. She worried so much over this daughter that she lost her appetite and ate very little despite the fact that there was a liberal and varied food supply available. Within twelve months she lost 30 pounds (13.6 Kg.) in weight, and the following spring her mouth and tongue became sore and she had diarrhea for the first time in her life. Each spring and fall she had had recurrences of the sore mouth and tongue and diarrhea. Her husband died nine years prior to the time she came to the clinic. Her income, which had been adequate, became inadequate, and her diet became poorer than it ever had been. The time came when she seldom ate eggs or milk and never had lean meat. She stated that for the last nine years, each spring and fall, the sore mouth and tongue and the diarrhea had become increasingly severe and that for the past five or six years she had been "crazy headed" at these times. Gradually she stopped going to visit the neighbors because she was afraid of becoming too confused to find her way back. She had not been away from home for two years. The children playing nearby made her feel, to quote her own words, "like I want to scream." She never scolded them, however, for she realized it was "just nerves."

For an indefinite period, extending over at least five years, she had seen flashing lights and crowds of people, out of both eyes, but always toward the right. She understood that these were pseudohallucinations and knew that actually there were no people there. In fact, it rather amused her at times, but at other times it seriously disturbed her. Frequently, each day for five years, she had heard the voices of a daughter who had died and of another daughter who lived several hundred miles away. She had complete insight, but that did not always relieve her distress at hearing their voices. Many times she had a premonition of some impending calamity which would destroy herself and her family. Her greatest worry, however, was the sudden spells of dizziness which made her feel, as she described it, "as if I will pitch over on my head."

The burning of her feet had been so severe for two years, especially at night, that she used to get up and bathe them in cold water. Her sleep was fitful. She dreaded sleeping because she had "scary dreams." She was afraid to sleep alone, and yet she had such insight into her condition that she was ashamed to ask any one to sleep with her. Many times she sat up until the rest of the family went to bed; then she sat just outside their door all night. She often hoped that she would die before she went "plumb crazy."

Throughout the time she was giving this history—and the times we have seen her since—she has stressed the increase in severity of all these symptoms during the spring and fall each year since their onset.

Physical examination showed that she was well developed, overweight, timid and nervous. Her tongue was greatly swollen and slightly red at the tip. Her skin was generally dry and scaling slightly over the elbows and forearms. There was slight injection of the vessels of the conjunctivas. Neurologic

examination showed definite tenderness to deep pressure in the muscles and over the nerve terminals of the legs, feet, forearms and arms. Vibratory sense was diminished in the forearms and below the knees, and there was some diminution in touch sense below the knees. Sensitivity to pinprick was decreased in the hands and feet. The reflexes were normal.

Laboratory Examination.—The red blood cell count was 340 million, hemoglobin 11.5 Gm. (75 per cent), and white blood cell count 8,100. Ascorbic acid was absent from the plasma. Examination of the urine showed no sugar, albumin, cells or casts. No thiamine was detected in the twenty-four hour excretion of urine, whereas the excretion of persons on an adequate intake is 0.1 mg. or above. Following the administration of 100 mg. of thiamine hydrochloride intravenously, 87 per cent of this amount was retained, in contrast to the retention of some 60 per cent or less in persons whose tissue stores of thiamine are adequate. The B. E. S. test was negative. Gastric analysis showed no free hydrochloric acid, pepsinogen or rennin even after histamine. A gastrointestinal series was negative.

Our past experience led us to realize that this woman had nutritional failure with thiamine deficiency predominating. As a matter of testing under controlled conditions, we gave her three separate injections of saline solution intravenously. As she did not improve in any way, we then added 100 mg. of thiamine hydrochloride. Her response, subjectively and objectively, was amazing. Within an hour her distressed facial expression disappeared, and she said that her head had stopped "swimming." The following day she volunteered that she had not heard the voices of her daughters and had not seen flashing lights or crowds of people since the thiamine was administered. Her feet had stopped burning, and she had slept well for the first time in several years.

This patient had been on an inadequate diet for several years. She began having "stomach trouble," became nervous and dizzy and developed pseudohallucinations. She saw crowds of people and heard the voice of a daughter who was dead and of another daughter who lived in a distant town. She had severe burning of the feet. The repeated intravenous injection of sterile saline solution gave her no relief. The administration of 100 mg. of thiamine hydrochloride intravenously relieved her within an hour. Her feet stopped burning,

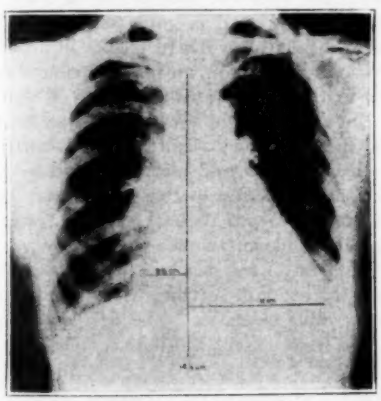

Fig. 3 (case 10).—Note dilatation of enlarged beriberi heart. Contrast measurements in this view before therapy with figure 4.

and she no longer saw crowds of people or heard the voices of her daughters.

CASE 10.—*History.*—D. E., a Negro woman aged 40, was admitted to the hospital in October 1942 in a stuporous condition but obviously in acute distress. A history could not be obtained until later.

Physical examination revealed that she had dyspnea and orthopnea, edema with general anasarca, and fluid in the abdomen. Her heart was enlarged; there was a systolic murmur over the entire precordium; the pulse rate was over 140. The neck veins were greatly extended. The liver was enlarged and painful.

Laboratory Examination.—The red blood cell count was 3.33 million, hemoglobin 11.3 Gm. (73 per cent) and white blood cell count 12,300. No ascorbic acid was present in the plasma. Examination of the urine showed no sugar, albumin, cells or casts. The B. E. S. test was positive. Ninety-one per cent of the initial dose of 100 mg. of thiamine was retained. No

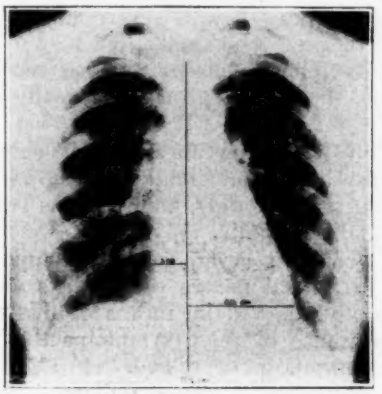

Fig. 4 (case 10).—The heart has decreased in its transverse diameter as evidenced by change in size following thiamine administration. See case 10 for full description.

nicotinic acid was detected in the urine. Gastric analysis showed no free hydrochloric acid, pepsinogen or rennin even after histamine.

The patient was digitalized without benefit. It occurred to us that the edema and anasarca might be covering up general malnutrition and that she might have a "beriberi heart," whereupon 100 mg. of thiamine hydrochloride was injected intravenously. Within twenty-four hours she began feeling better, and in seventy-two hours her pulse rate was normal and she had lost 30 pounds (13.6 Kg.) of fluid (water). Thiamine was given each day for ten days, at the end of which time she had lost 10 additional pounds of fluid. The dyspnea and heart murmur disappeared. Six foot x-ray films taken before (fig. 3) and after (fig. 4) thiamine therapy showed clearly the decrease in the size of the heart. After she started to improve, it was found that the peripheral nerves were tender. Prior to this time she had been too stuporous to respond to pressure. After the edema had subsided, general atrophy of the body, especially the muscles, could be seen.

After the patient was better, we obtained from her the following dietary history and history of the onset of her illness: For years she had eaten chiefly refined carbohydrates and fats. About two years before admission to the hospital she noticed that she was beginning to lose strength. About one year later she experienced a feeling of heaviness and stiffness of the legs. For many months she had burning of the ankles and the soles and dorsal surfaces of the feet. Concurrently she had headaches, insomnia, nervousness, dizziness, dyspnea, orthopnea and palpitation. Two months prior to admission her feet began to swell, and the swelling gradually extended up the body. She went to a number of physicians who told her she had "heart trouble" and to a number of "herb doctors" who failed to relieve her. Two weeks before she came to the hospital, she became unable to walk.

The patient, who was admitted to the hospital in a stuporous condition, had an enlarged heart, cardiac murmurs, tachycardia and a sore and tender liver. Since she did not respond to digitalis, we thought of the possibility of thiamine deficiency masked by stupor and anasarca. We treated her accordingly, with the results described. At the present time she is working and is in excellent health.

SUMMARY AND CONCLUSIONS

1. The result of the clinical and laboratory studies of severe atypical deficiency diseases indicates that the very essence of successful medical practice is dependent on a precise diagnosis followed by adequate and persistent therapy.

2. Improvement in the health and nutritional status of 10 representative cases illustrates the thorough study required before diagnosis of nutritive failure is justified.

Case 1 illustrates how a severe infection, followed by greatly reduced food intake, led to nutritive failure in an infant. The symptoms were relieved by prompt therapy, and the child is growing normally and in good health.

Case 2 illustrates how an extremely unbalanced diet led to a psychosis that could be relieved quickly by judicious nutritive therapy, allowing this person to lead a normal and happy life.

Case 3 illustrates severe sensory symptoms arising from the peripheral nerves of the legs and feet that were promptly relieved by means of thiamine. With the disappearance of these symptoms the person was no longer nervous or depressed.

Case 4 illustrates a severe unilateral ocular lesion associated with loss of weight and strength. Treatment with riboflavin was followed by healing, and this person was able to return to work.

Case 5 is illustrative of a girl who voluntarily reduced her food intake in order to lose weight. She developed pseudohallucinations, smothering spells, nervousness and palpitation. Repeated injections of sterile saline solution failed to give relief, but all these symptoms disappeared following the administration of thiamine. The laboratory findings were suggestive of diminished cerebral metabolism and offer an explanation of some of the symptoms.

Case 6 is illustrative of a Negro woman who became psychotic and who fortunately had a small unilateral skin lesion on the side of her neck which could be diagnosed as pellagra. After treatment she was able to return to her work and remains in excellent health.

Case 9 illustrates the effects of a diet which had been inadequate and unbalanced for an indefinite period. The patient became nervous and felt "like she wanted to scream," and she developed pseudohallucinations and heard voices even though she knew the people were hundreds of miles away. She saw people although she actually knew they were not there. She developed severe burning of the feet. Three separate injections of saline solution intravenously did not give relief, but 100 mg. of thiamine hydrochloride relieved her within an hour. Her feet stopped burning and she volunteered that she no longer heard the voices of her daughters or saw the crowds of people.

Case 10 was one in which a woman was brought in a stuporous condition into the hospital. She had an enlarged heart, cardiac murmurs, tachycardia, anasarca, and a sore and tender liver. She failed to respond to digitalis. Her "beriberi" heart was treated with excellent results, as described in the history. At the present time she is working and is in excellent health.

3. These findings show that severe atypical deficiency disease, like other forms of nutritive failure, can be successfully corrected by the application of the following four essentials for therapy:

(*a*) *Diet:* 4,000 calories, 120-150 Gm. of protein, rich in vitamins and minerals.

(*b*) *Basic Therapy:* thiamine, riboflavin, niacin amide, ascorbic acid, orally.

(*c*) *Additional Medication:* synthetic vitamins as indicated, orally or parenterally.

(*d*) *Natural B Complex:* brewers' yeast or extract, or rice bran extract, and/or liver extract orally or parenterally.

PANEL DISCUSSION

ON PAPERS OF DR. GOVIER, DR. SEVRINGHAUS AND DRS. SPIES, COGSWELL AND VILTER

DR. MORRIS FISHBEIN, Chicago, Moderator: It is difficult to be moderator on a subject in which there has been so much exaggeration and so much exploitation. It is easy to see, however, why there should be a Dr. Jekyll and a Mr. Hyde aspect to the subject, because vitamins lend themselves to a type of use by the public without medical direction which would not be possible for the sulfonamides or penicillin. The majority of the responsibility for the present stage of the vitamin situation must rest on the medical profession, but certainly equally at this time a tremendous responsibility must rest on the governmental officials charged with regulation in this field. I refer, of course, to the Food and Drug Administration, which has to do with the standardization of formulas and dosages, and particularly to the Federal Trade Commission, which must bear the major responsibility for the control of claims made to the public in newspapers and periodicals and on the radio. Now, as an example of the conditioning of the public to excessive use of unnecessary vitamins I should like to read a letter sent by Mr. Donald Nelson to a leading manufacturer in Chicago whose firm has some 6,000 employees. The letter was sent within the past week: "I have made a careful study of a project which has been conducted for more than a year to provide a daily vitamin supplement to the diets of war workers in large aircraft plants. This project is sponsored by the National Research Council and administered by a group of scientific people. The development has been chartered with scientific precision and the results have proved convincing. Absenteeism has dropped to a new low level, and the general health and attitude of the workers has risen to an unexpected high. I have reason to know that this resulted in a marked improvement in production." That means, of course, that under the auspices of the War Production Board extra combined vitamin pills have been given to hundreds of thousands of workers in American industry and that under the apparent auspices of a National Research Council committee the word is going out that the daily taking of such combined pills by workers results in a fall in absenteeism, an increase in production, an improvement in general health and a benefit to the mental attitude. Now if that statement is made under those auspices how can we blame the public generally for believing what they read in the advertisements? Certainly the worker who is told under the authority of the plant management that the taking of these pills every day by all the workers has brought about these wonderful results is going to wonder why he should not at once go and buy a few bottles for his wife and the rest of the family. So it is that this conditioning is not wholly the fault of the medical profession. It must rest with many other agencies. The first question that I have here reads "To what extent is vitamin C helpful in the treatment of arthritis?"

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: As far as I know there has been nothing published on an extensive series of arthritic patients relieved by vitamin C treatment. Of course, severe scurvy may involve acute or subacute arthritic phenomena in the adult but more frequently in children. I have seen 1 case, and 1 only that I know of, with a bilateral arthritic involvemeht promptly helped by vitamin C. It must be uncommon.

DR. FISHBEIN: The next question says "What is the value of thiamine, which is much recommended in arthritic conditions."

DR. TOM D. SPIES, Birmingham, Ala.: As far as I know thiamine does not help people with arthritic conditions unless they also have a superimposed thiamine deficiency. Not infre-

quently people have a neuritis which may be of thiamine lack in origin, and it is not surprising that some people may be told that they have arthritic pains and that they receive some relief following administration of large amounts of thiamine.

DR. FISHBEIN: The next question is "Is there any danger in giving thiamine hydrochloride intravenously?"

DR. SEVRINGHAUS: That would depend entirely on the dose. I have not known of any catastrophes or difficulties from it. Some people are using enormous doses, which do not appeal to me. I think it is far more important, if it is to be used parenterally, that there should be repeated doses of moderate size, say from 5 to 50 milligrams, rather than enormous doses, with which there might be risk. With such doses I think there is no such risk.

DR. FISHBEIN: For Dr. Holt: "What methods of analysis for amino acids are employed? Are these of sufficient accuracy to justify conclusions?"

DR. L. EMMETT HOLT JR., Baltimore: There are accurate analyses for the measurement of amino acids in protein hydrolysis—fairly accurate methods suitable for foods and only a few methods accurate for urine assay. We have about six amino acids that can readily be determined in the urine and we get information of value by using those measurements. In the near future there is a prospect that the number will be extended from six to ten, but there are still a number of important amino acids that cannot be accurately assayed in the urine.

DR. FISHBEIN: Dr. Spies, "What do you do with persistent, profuse salivary flow when the patient is otherwise well?"

DR. SPIES: I do not do anything with such a patient unless the person has pellagra. One of the symptoms of pellagra is excessive salivation. That, however, isn't the only thing that causes excessive salivation, and unless pellagra is behind it we do not do anything about it.

DR. FISHBEIN: For Dr. Spies: "Much has been done in denoting minimum requirements of vitamins. No attention has been paid to the ability of the organism to absorb and synthesize vitamins. Is it not true that such entities as infection and endocrine dyscrasias interfere with absorption? Has not the vitamin been unjustly misjudged as useless when actually the organism is not brought up to balance to utilize the vitamin?"

DR. SPIES: A vitamin deficiency may arise from a number of different causes. A person may eat an adequate diet. He may not absorb it properly or he may absorb it properly and not utilize it properly or his requirement may be excessive, as in the case of hyperthyroidism or people with fevers. Any one who has absorption trouble or who has trouble in utilization or whose requirement is abnormal is obviously a medical problem. The vitamin disturbance is engrafted on this.

DR. FISHBEIN: Dr. Sevringhaus.

DR. SEVRINGHAUS: There is a further answer to that question, and I am going to take the liberty of asking Dr. Holt to tell about his work on the synthesis of vitamins.

DR. HOLT: We made some observations in Baltimore a few months ago on persons placed on a thiamine deficient diet. There was definite evidence that under certain conditions in our experiments quantities of thiamine that were considerable could be manufactured by the intestinal bacteria. There were not enough entirely to provide for the thiamine requirements, and furthermore this biosynthesis was abolished by the administration of sulfonamides. We have finished some experiments, unpublished as yet, on persons on a low riboflavin intake. The diet was, as before, a synthetic diet in which all vitamins were supplied as pure substances. These persons—there were 12 of them—were continued on the experiment for more than three months. They were getting merely traces of riboflavin in the diet, about 60 to 70 grams a day. They continued throughout this period to put out in the urine twice as much as they were ingesting and in the stools four times as much each day as they were digesting. In other words, they were secreting six times as much riboflavin as they were taking, and these values in the excreta continued unchanged. We tried to stop the riboflavin synthesis by giving sulfonamides in the maximum doses. We were unable to stop it as we had in the case of thiamine, so we are under the impression that it is a difficult thing to get a riboflavin deficiency. I do not doubt that it has been done and can be done under particular situations, but I really do not know what those are yet. However, it is clear that under many conditions the riboflavin requirement is minimal.

DR. FISHBEIN: Dr. Sevringhaus, "What about the large dosages of vitamin A recommended by Cuban authors for hypertension? Are there any dangers in these large dosages of vitamin A?"

DR. SEVRINGHAUS: In addition to the poor economics of feeding large amounts of the material, which has already been shown to be futile with commercial supplies of vitamin A, we must recognize that big doses of vitamin A, such as 100,000 or more units daily, sometimes cause disturbance in the gastrointestinal tract. The most exaggerated form of it is the illness that has been caused to some explorers who ate bear liver, which has enormous amounts of vitamin A, and their overdose is perhaps one of the few instances of illness from too much vitamin.

DR. FISHBEIN: Apparently some one, impressed by the advertisements for vitamin E, wants to ask Dr. Holt "Has there been any relation between arginine and vitamin E?"

DR. HOLT: The answer is no.

DR. FISHBEIN: A question also addressed to Dr. Holt: "What is the influence of the sulfonamides on the vitamins?"

DR. HOLT: The sulfonamides inhibit the growth of certain bacteria in the intestinal tract, and by that means they may reduce the available thiamines.

DR. FISHBEIN: I have a question for Dr. Sevringhaus: "How long would you continue to give thiamine and other factors of the vitamin B complex to a patient with peripheral neuritis when they do not appear to be producing satisfactory results, before coming to any conclusion regarding the therapeutic value?"

DR. SEVRINGHAUS: Not more than three months; but I do not believe one could be positive that there was no benefit if one made the program of treatment a month or less. The changes are certainly slow, and the more extensive the lesion the longer the time it will take until recovery has been achieved.

DR. FISHBEIN: Apparently the one speaker who was completely able to satisfy the audience so that there are no questions for him was Dr. Govier. I would say, in closing the panel, that in the present evolutionary stage of the use of vitamins in the United States it has been clearly established that serious vitamin deficiencies do exist, although the exact extent of such deficiencies in the so-called subclinical stage is not yet clearly apparent, regardless of pronouncements made by any governmental, industrial or manufacturing agencies. The greatest portion of the promotion of vitamins to the public is in such clearly undefined conditions as the arthritic conditions, the common cold, beauty, charm and rejuvenation. It is quite possible to sell almost anything for those conditions and get a fair degree of response from the public. The responsibility rests largely on the medical profession as to the extent to which the public is conditioned to the indiscriminate use of vitamins. The worst evil in the picture today is the sale of vitamin combinations containing large amounts of vitamin A, large amounts or relatively small amounts, depending on the market price at the time, of vitamin C and totally unnecessary vitamin D for adults as nearly as we can determine, at least except when prescribed by a physician. I believe the future is going to bring us back more and more to that point of view in relationship to the use of vitamins which we had to adopt in 1906 or '07 on the so-called shotgun prescription of drugs. So long as we permit the sale of combinations containing anywhere from seven to ten different vitamins and five to eight different minerals in a single pill, with the hope that something in the mixture will hit something that the patient has, we are getting farther and farther away from scientific medicine.

DIGITALIS POISONING

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Digitalis, like many other potent drugs, exhibits a narrow zone between therapeutic effectiveness and toxicity. The symptoms and signs of what may be considered poisoning should be clearly set forth, albeit they may be somewhat arbitrarily and dogmatically delineated. We may consider as manifestations of overdigitalization the development of symptoms more serious than anorexia and nausea, i. e. the appearance, with or without symptoms, of premature ventricular contractions, bigeminy, atrial fibrillation, paroxysmal atrial tachycardia with or without auriculoventricular block or prolongation of the PR conduction time or S-T segment changes. In extreme cases death has occurred, presumably from cardiac or ventricular inhibition or ventricular fibrillation.

Serious toxic manifestations from overdosage of digitalis glucosides have been more and more frequently observed during the past few years. Isolated cases [1] of severe intoxication have been reported from various clinics, but few statistics as to the actual frequency are available. It would be well worth while to have these for comparison with our figures and for study. In the reports of clinical investigations of some of the newer crystalline preparations, as in Chavez's [2] recent paper on the advantages of ouabain (Arnaud's), the author records the fact that no serious toxic reactions were observed in his twenty years of experience with the drug. This exemplifies the success that attends the personal use of potent drugs by a painstaking, careful physician.

Fahr and LaDue [3] stated that only 10 of 256 patients who were given lanatoside C intravenously or orally suffered from nausea and occasional vomiting, and that these symptoms cleared up with discontinuation of the drug administraton. They state that no patients showed mental or visual disturbances or absolute intolerance to lanatoside C. They admit that 8 patients did not tolerate the usual dose, because of nausea and vomiting and extrasystoles. Three others showed extrasystoles, in 2 of which there was bigeminy. One elderly patient who had arteriosclerotic coronary artery disease was observed to develop complete heart block in the presence of auricular fibrillation following digitalization with lanatoside C.

The subject of digitalis poisoning has apparently not been particularly popular, probably because it does not reflect credit or bring prestige to the reporter. Teachers, and especially cardiologists, recognize certain responsibilities in their own spheres of influence or communities in the matter of the use of potent drugs. The increase in the number of toxic reactions of any drug calls for investigation of all the possible factors that have contributed, so that steps may be taken in the prevention of further difficulties.

OUR EXPERIENCES

For some time we have suspected that there has been an undue and undesirable increase in the frequency with which we have been confronted with cases of digitalis poisoning. We therefore have attempted to determine the actual frequency with which these embarrassing conditions with disturbing symptoms have been occurring. We have established and compared the average incidence of digitalis poisoning cases admitted to the medical service of the John Sealy Hospital for the ten year period 1930-1939 and each year thereafter, 1940, 1941, 1942 and 1943, as shown in table 1.

It was seen in the ten year period that there were only 8 cases, an average of about 1 case a year, as compared with 3 cases in 1940, 6 cases in 1941, 11 cases in 1942 and 16 cases in 1943. There was thus a tenfold to twentyfold increase in poisoning. This occurred in a relatively small service of 500 to 600 hospitalized cardiac patients a year. Of these 1 case in every 3, or about 225 each year, presented congestive heart failure and received digitalis medication.

On this rough statistical basis only 1 in 300 was poisoned up to 1940, when 1 in 100, then 1 in 50 in 1941, 1 in 20 in 1942 and finally 1 in every 15 cases in 1943 treated with digitalis showed symptoms of moderate to severe intoxication.

A study shown in table 2 of the age, sex and color distribution of our patients that had been overdigitalized to the point of poisoning revealed little suggestive information. There was a grand total of 44 cases; 28 were observed in males, as contrasted with 16 in females. There were more cases among Negroes than among white persons, particularly among the Negro females.

From the Cardiological Service of the John Sealy Hospital and the University of Texas Department of Medicine.

Read before the first Pan American Cardiological Congress, held at the inauguration of the Instituto Nacional de Cardiologia in Mexico, D. F., April 20, 1944.

1. Reports of isolated cases:
Murgel, L.: Ventricular Paroxysmal Tachycardia Due to Digitalis Intoxication: Case, Rev. méd. munic. **5:** 323 (March) 1943.
Zubillaga, R.: Auricular Flutter Precipitated by Ampule of Ouabain (Crystallized Strophanthin) in Previously Digitalized Patient, Bol. hosp., Caracas **41:** 145 (May-Aug.) 1942.
Matte, R.; Lira, E., and Valle, E.: Digitalis Intoxication: Case in Child, Rev. chilena de pediat. **12:** 850 (Nov.) 1941.
Wilkinson, K. D.: Digitalis Poisoning: 2 Cases, Brit. Heart J. **4:** 1 (Jan.-April) 1942.
Horacio Liccioni: Transitory Auricular Flutter Due to Digitalis Intoxication: Case, Rev. policlin. Caracas **10:** 192 (May-June) 1941.
Imelio, L., and Taltavull, R. J.: Pericardiac Calcification and Digitalis Auricular Flutter: Case, Rev. méd. de Rosario **30:** 1195 (Nov.) 1940.
Cohen, R. V., and Brodsky, M. L.: Digitalis Allergy: Case, J. Allergy **12:** 69 (Nov.) 1940.
González Aguirre, S.: Massive Intoxication of a Boy 5 Years Old, Arch. argent. de pediat. **11:** 169 (Aug.) 1940.
Varga, T., and Greiner, K.: Digitalis Poisoning in Child: Case, Kinderärztl. Praxis **11:** 218 (July) 1940.
Varga, T., and Greiner, K.: Digitalis Poisoning in a Child: Case, Orvosi hetil. **84:** 188 (April 13) 1940.
Malamani, V.: Unusual Behavior of Electrocardiogram (Type of Myocardial Infarct After Administration of Digitalis in Patient with Rheumatic Cardiopathy), Gazz. d. osp. **60:** 683 (July) 1939.
Kiss, P., and Wollek, B.: Interesting Digitalis Poisoning in Child, Orvosi hetil. **83:** 225 (March 11) 1939.
Lorenzo, R.: Auricular Fibrillation as a Manifestation of Intolerance to Digitalis Preparations, with Report of Case, Prensa méd. argent. **25:** 811 (April 27) 1938.
Dry, T. J., and Koelsche, G. A.: Complete Auriculoventricular Dissociation Due to Digitalis, Without Systemic Effects of Overdosage: Case, Ann. Int. Med. **11:** 2043 (May) 1938.
Allen, F. M. B.: Digitalis Poisoning in Child with Recovery, Brit. M. J. **1:** 896 (April 23) 1938.
Duvoir, M.; Pollet, L.; Desoille, H., and Gaultier, M.: Severe Digitalis Intoxication: Electrocardiographic Study: 3 Cases, Bull. et mém. Soc. méd. d. hôp. de Paris **54:** 159 (Jan. 31) 1938.
Halbron, P.; Lenormand, J., and Meyer-Heine, A.: Complete Arrhythmia Caused by Intoxication Following Attempted Suicide: Case, Paris méd. **2:** 124 (Aug. 14) 1937.
Cattaneo, L.: Dangers of Additive Effect of Calcium and Digitalis Therapy: Fatal Case, Atti Soc. ital. di ostet. e ginec. **33:** 47 (Jan.-Feb.) 1937.
Lambert, G.: "Digitalis Coupling" or Extrasystolic Coupled Rhythm, Roy. Berkshire Hosp. Rep., 1934 and 1935, p. 69.
Bower, J. O., and Mengle, H. A. K.: Additive Effect of Calcium and Digitalis: Warning with Report of Two Deaths, J. A. M. A. **106:** 1151 (April 4) 1936.
Tomaszewski, W., and Lapa, W.: Electrocardiographic Study of Cardiac Disturbances Resulting from Attempted Suicide with Digitalin, Arch. d. mal. du cœur **29:** 196 (March) 1936.
Poumailloux, M.; Desoille, H., and Negreanu: Digitalis Poisoning: Personal Cases; Medicolegal Interest, Ann. de méd. lég. **15:** 789 (July) 1935.
Tourreilles, J. F., and Vazquez, P. C.: Total Auriculoventricular Block Caused by Digitalin, Prensa méd. argent. **22:** 1119 (June) 1935.
Parson, G. W.: Visual and Cerebral Manifestations of Digitalis Poisoning, Tri-State M. J. **7:** 1375 (Nov.) 1934.

2. Chavez, I.: Comparative Value of Digitalis and of Ouabain in the Treatment of Heart Failure, Arch. Int. Med. **72:** 168 (Aug.) 1943.
3. Fahr, G., and La Due, J.: A Preliminary Investigation of the Therapeutic Value of Lanatoside C (Digilanid C), Am. Heart J. **21:** 133 (Feb.) 1941.

There were three times as many Negro females as white females. The Negro and white males were about equally distributed. The average ages varied but little. The Negro males had the highest age average. There were 25 cases of poisoning among the Negro and 19 cases among the white patients. This does not warrant any assumption of the less careful treatment

TABLE 1.—*Cases of Digitalis Poisoning*

Year	1930 to 1939	1940	1941	1942	1943
Number	8	3	6	11	16

TABLE 2.—*Distribution of Cases of Digitalis Poisoning*

Year	1930 to 1939	1940	1941	1942	1943
Number	8	3	6	11	16

for the Negroes but probably is due in a large part to lower intelligence and may indicate less careful observance of directions on their part.

Types of heart disease associated with digitalis poisoning are shown in table 3. In this series of 44 patients who showed signs of overdigitalization the great majority presented evidences of hypertensive arteriosclerotic heart disease. This is, of course, the most common cause of heart failure in general city hospitals. There were 21 pure hypertensives, 8 showed evidences of advanced arteriosclerosis in addition to hypertension, and 5 showed evidences of coronary sclerosis without hypertension. Four were hypertensives with syphilis and 3 with syphilitic aortic disease. There was only 1 case of rheumatic heart disease, 1 with congenital heart disease and 1 with no heart disease in the series.

The type of heart disease with congestive failure that predominated in our series is just the type that our Latin American colleagues [3] found to respond most spectacularly to the preliminary use of ouabain in doses of 0.25 mg. intravenously once or twice a day for six days. In such treatment the patient must not have had any digitalis or cardiac glucosides within two weeks of admission in congestive failure.

Very few patients of this type come to us in this day without having been treated with potent digitalis preparations. Most of the hospitalized patients have been previously digitalized without achieving the desired prompt reestablishment of circulatory equilibrium.

The symptoms and signs exhibited by the 44 patients admitted with digitalis poisoning varied widely, as

TABLE 3.—*Age, Sex and Color*

Males, white	15	Males, Negro	13	Total	28
Ages	46 to 83	Ages	36 to 76		
Average age	46	Average age	53		
Females, white	4	Females, Negro	12	Total	16
Ages	14 to 66	Ages	18 to 65		
Average age	44	Average age	43		
Total white	19	Total Negro	25	Grand total	44

shown in table 4. A surprisingly large number, 17, did not complain of any symptoms of poisoning whatever but showed signs of poisoning, particularly disorders of the cardiac mechanism, which were recorded by electrocardiographic studies. In those with symptoms, anorexia was present in 21, nausea in 18, vomiting in 16, diarrhea in 5, weakness and fatigue in 4, yellow vision in 6 and scotomas in 3.

Abnormal electrocardiographic signs exhibited were most important. Peculiarly enough in our series, the most common disturbance in cardiac action, induced by overdigitalization, was paroxysmal tachycardia with auriculoventricular block, which was recorded in 20 cases. Isolated premature contractions were noted in 6, trigeminy once, and bigeminy was found in 12 cases, ordinary atrioventricular heart block in 7 and sinoatrial block in only 1, nodal rhythm in 2 and conspicuous bradycardia in 2. Atrial fibrillation developed in 10 cases and flutter in 1. Depression of the RS-T segments and negativity of T waves, so commonly associated with digitalization, were present in only 15 cases. Death followed shortly after intravenous injection of a crystalline digilanid in 0.5 mg. dose in 2 cases. Death was presumably the result of ventricular fibrillation in each case. Two other patients with old hypertensive coronary arteriosclerosis in severe congestive failure refractory to diuretic treatment had been digitalized to the limit. They were then given a half milligram of digoxin by mouth as a last resort, in the hope of augmentation, and died during the following night, possibly as the result of the medication.

COMMENT

The questions raised by our findings are numerous. The data are not extensive and permit of no far reaching conclusions but command serious consideration and further investigation. They call attention to the need

TABLE 4.—*Symptoms and Signs in 44 Cases of Digitalis Poisoning*

	Cases
Anorexia	21
Nausea	18
Vomiting	16
Diarrhea	5
Weakness fatigue	4
Yellow vision	6
Scotomas	3
No symptoms	17
Paroxysmal tachycardia with auriculoventricular block	20
S-T and T dep	15
Premature contractions	
Irregular	6
Bigeminy	12
Ext. bradycardia	2
Auriculoventricular block	7
Auricular fibrillation and flutter	10
Deaths	2

of greater respect for and greater care in the administration of potent digitalis and full realization of our responsibilities in the matter. Every factor possibly contributing to an increase in poisoning should be searched out and removed when it is possible to do so. Further safeguard must be added for the protection of the patient.

Some of the older physicians who have become active again, and some who are not so old who practiced medicine more than a decade ago, when many of the digitalis preparations on the market were weak and had lost practically all of their glucoside content, may have got in the dangerous habit of giving tincture of digitalis in teaspoon doses three times a day and tablets three times a day, just as elixirs or any other pills were given. Such practices in this day, when most of the digitalis preparations on the market are of full potency, would of course prove disastrous and produce much poisoning.

To add to the confusion, as Geiger [4] pointed out, the U. S. P. XI, which became effective in June 1936, authorized changes in the methods and in the actual standard of digitalis which definitely increased the potency of digitalis preparations on the market. This increase, which amounted clinically to 50 per cent, was

4. Geiger, A. J.: Digitalis U. S. P. XI: Recent Changes in Potency and Designation, Connecticut M. J. **4**: 331 (June) 1940.

not adequately publicized. Therefore, among the factors that have contributed to an increase in poisoning with digitalis we must place well up in the list the increased potency of the standard powdered leaf as well as the tendency to make superpotent preparations. Clinically the potency hasn't been significantly affected by a change from U. S. P. XI to U. S. P. XII. A more uniform standard for digitalis preparations must be worked out and rigidly enforced on all manufacturing chemists.

Many pharmaceutical houses have been particularly interested in placing on the market very effective pills or other oral preparations as well as purified extracts and crystalline glucosides of great potency. The detail men of many firms extol the great advantages of their specific preparation over all others. Since each firm has its own trademarked preparation and the number of firms is considerable, much confusion arises in the mind of the practitioner who uses now this company's and now another company's product. Present day tinctures of digitalis cannot be used in teaspoon doses three times a day for more than a day, and modern tablets and pills cannot be given three times a day for more than five days without risking intoxication. It is to be remembered that there is retention or accumulation of about half of this daily dose, which in time will bring some patients to the point of intoxication even on so-called maintenance dosage.

Many practitioners furthermore do not seem to realize that digitalization of some patients is obtained by as little as 3 units given intravenously. The addition of even one or two ampules of a digitalis to an intravenous infusion given to a patient who is already digitalized may cause serious complications. Patients who are hospitalized with congestive failure in these days probably have much more severe myocardial insufficiency than those who were hospitalized a decade ago. Patients of today are usually given very adequate digitalis therapy of strong preparations by the practitioner, who carries them along as long as he can do so and sends them on only after he has failed.

STANDARDIZATION

The standardization of digitalis preparations is still far from satisfactory. A more uniform and clinically effective standard for oral and for intravenous use must be worked out. Human standardization by various methods [5] is perhaps a bit more satisfactory but less applicable than the biologic methods using animals. The cat method of standardization of digitalis by intravenous perfusion is most widely used and has been adopted by the U. S. P. XII and other pharmacopeias and by the Committee on Hygiene of the League of Nations.

Guerra [6] has pointed out that the cat method is unsatisfactory for Digitalis lanata, for which it is necessary to consider a gastrovenous coefficient. He has also contended that the biologic response to intravenous injection of pure glucosides is qualitatively and quantitatively different from that obtained by use of the standard powdered leaf.

He has attempted to establish a reference standard that would be stable and clinically effective when administered by different routes. He followed the method of the U. S. P. XII and titrated five samples of pure digitalins using two groups of 6 cats for each sample. He adjusted the technical details to those of the international collaborative assay of the standard of digitalis leaves and developed the data in terms of the statistical theory. The relative potency of the samples studied was established, using as comparative standard the titration of the samples of digitalin D (digitoxin) because of its stability and susceptibility for accurate control both from a technical and from a clinical standpoint.

The ideal of absolute uniformity and standardization of all preparations of digitalis on the market should be approached as nearly as possible.

DOSAGE

The variability of standardization and the increased potency of digitalis preparations must be kept in mind in calculating the dosage. In the methods recommended for digitalization the total dose should be kept well below the toxic level. The total dose calculated according to body weight and then administration of this amount in divided doses within a day or two has resulted in toxic manifestations in a large percentage of cases. It is probably safer, as W. D. Stroud [7] has suggested, to fix a maximum dosage of 18 grains (1.2 Gm.) of standardized powdered leaf for digitalization of patients who have had no digitalis previously. This should be given in divided doses according to the urgency of the situation and administered for a period of twenty-four to thirty-six hours a few days or a week, followed by a maintenance dose of 1 grain (0.065 Gm.) per day.

CONCLUSIONS

It seems highly desirable that the practitioner become thoroughly versed in the use of one good powdered leaf digitalis, preferably one produced by a pharmaceutical house of good repute that grows its own digitalis leaf and standardizes it in its own laboratory. This practice is far better than using now this preparation and now that preparation, urged on physicians by the detail men of this pharmaceutical house or that pharmaceutical house, whose product has this advantage or that advantage.

It may be desirable to put digitalis powdered leaf of 0.02 Gm., or ⅓ grain, so that three tablets might be given a day over a period of time without causing poisoning.

Every practitioner should also become fully acquainted with one good intravenous preparation, preferably a crystalline substance. He must know the few indications and the contraindications for the use of such a potent drug. He should be familiar with the dosage and the dangers that accompany its use, particularly after a patient has received one of the glucosides already.

One of the crystalline, e. g. lanata, preparations, preferably the safest one, should be chosen for regular use, remembering always that the intravenous use of drugs is fraught with danger. It must be remembered that 3 units intravenously constitutes a digitalizing dose, or a toxic dose, if oral digitalization has been carried out.

Some such strict ruling as outlined concerning the manufacturing of digitalis products and their use must be promulgated for the most effective and safe general use of this sovereign remedy.

5. Martin, L. E.: A Clinical Standardization of Digitalis, J. Pharmacol. & Exper. Therap. **31**: 229 (July) 1927. Gilchrist, A. R., and Lyon, D. M.: The Chemical Comparison of Three Preparations of Digitalis, ibid. **31**: 319 (Aug.) 1927. Dieuaide, F. R.; Tung, C. L., and Bien, C. W.: A Study of the Standardization of Digitalis: I. Clinical, J. Clin. Investigation **14**: 725 (Nov.) 1935. Gold, H.; Kwit, N. T.; Cattell, M., and Travell, J.: Studies on Purified Digitalis Glucosides: IV. The Single Dose Method of Digitalization, J. A. M. A. **119**: 928 (July 18) 1942.

6. Guerra, F.: Digitalinas estudio biometrico, Bull. Inst. de cardiol. de Mexico, to be published; personal communication to the author at the sessions of the Pan American Cardiological Meeting held in honor of the inauguration of the Instituto Nacional de Cardiologia in Mexico, D. F., April 18 to 22, 1944.

7. Stroud, W. D.: The Modern Use of Digitalis, personal communication to the authors and presentation at the inauguration of the Instituto Nacional de Cardiologia in Mexico, D. F., April 20, 1944.

THE MANAGEMENT OF TRAUMATIC HYPHEMIA

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Contusions of the eyeball result in varying degrees of trauma to the ocular structures, depending on the amount and direction of transmitted force. The resultant complications are recognized as hyphemia, or hemorrhage into the anterior chamber, rupture of the iris sphincter and traumatic mydriasis, various stages of traumatic cataract with or without dislocation of the lens, vitreous hemorrhage and ruptures of the retina and choroid. When no rupture of the cornea or sclera occurs, the traumatic hyphemia may result in the consecutive secondary complications of bloodstaining of the cornea, atrophy of the iris, secondary glaucoma and glaucomatous optic atrophy with anterior staphyloma, occasionally necessitating enucleation. Very rarely sympathetic ophthalmia has followed the latter chain of events.

The ophthalmologist is helpless in treating the first group of traumatic complications, since the damage has already been done before the patient is ever seen for treatment. However, most of the complications of the latter group may be avoided by early and effective treatment, consisting only of simple paracentesis whenever the intraocular pressure is increased or when the anterior chamber is completely filled with blood and the instillation of miotics thereafter. Indeed, it may be possible in many cases to avoid surgery entirely if miotics rather than mydriatics are employed before secondary hemorrhage ensues.

A review of the patients whom Dr. E. C. Ellett and I have seen in the past eighteen years demonstrated that we had seen many cases of anterior chamber hemorrhage of mild degree which absorbed quickly and permanently with simple rest in bed and the use of atropine. However, in some instances when such patients were apparently recovering satisfactorily and particularly in those who were cooperating well, a secondary hemorrhage much greater than the first occurred from the iris on the third to the fifth posttraumatic day, and if paracentesis of the cornea was not done immediately, bloodstaining of the cornea followed. One patient was being carefully watched, being seen at the hospital morning and night. Hyphemia filling half of the anterior chamber was present, but the intraocular pressure was normal. At 2 a. m. the patient complained of pain in the eye and when seen at 8 a. m. the chamber was filled with blood and the pressure was elevated. Paracentesis was immediately performed and, although absorption of the blood was rapid and complete, faint central bloodstaining of the cornea was observed at paracentesis, demonstrating the narrow margin which exists between hyphemia and bloodstaining and that an increase in intraocular pressure is the factor which determines the production of keratohemia.

Duke-Elder states that the only permanent result which may follow hyphemia is a bloodstaining of the cornea with the products of broken down red corpuscles in the anterior chamber. He feels that it is a rare condition and, along with Parsons, Collins and others, concludes that it follows hemorrhage only in conditions of raised intraocular pressure. Alta G. Charles, in a review of the subject of bloodstaining of the cornea, recorded Romer's observation that it occurred in 1 out of 400 severe eye injuries at the Giessin Clinic, and at Moorfield's Hospital it was observed in about the same proportion.

Macroscopically the condition varies in color from a rusty red-brown to a greenish black or greenish yellow to white. The staining is usually disciform with a clear portion of cornea around the limbus and at certain stages of resolution may simulate the appearance of a lens dislocated into the anterior chamber, although the matter of diagnosis should never be confusing if examination is made by biomicroscopy. Clearing takes place gradually from the periphery inward and usually leaves a gray central patch but may be complete after two or more years. However, if the secondary glaucoma is persistent the cornea may never clear but becomes white and unsightly, as illustrated by the following case report:

F. C., a boy aged 11, was seen by Dr. Ellett, July 25, 1928, five months after suffering a contusion of the left eye from a rock thrown by an angry Negro. He was treated by a colleague in Jackson, Miss., but nothing but local treatment was attempted. Visual acuity was reduced to light perception. Disciform bloodstaining of the cornea was present, associated with photophobia and lacrimation. The tension was normal. Atropine, hot applications and rest were prescribed with immediate improvement in subjective symptoms. Partial clearing of the cornea took place through the following year, so that the iris became faintly visible. However, the cornea never did clear entirely. The tension rose to 60 Schiötz, the eyeball became injected and photophobic and did not look well from a cosmetic standpoint, so the globe was removed and a 16 mm. glass ball implanted in Tenon's capsule on July 19, 1931. The pathologic report of the section by Dr. Jonas Friedenwald follows:

"Edema of the corneal epithelium. Softened, distorted, cataractous lens adherent to the undersurface of the cornea, which shows edema on the inner fibers. The iris has disappeared. There is a dense organized cyclitic membrane, which surrounds the ciliary body in part and extends to the lens capsule in front of the anterior of the cystic retina behind. Lamina cribrosa is depressed. Central vessels are engorged. Nerve is degenerated and there are very few ganglion cells in the retina. Impression: Secondary glaucoma. Lens at least partially dislocated at the time of injury."

Visual acuity of the right eye was 6/6 throughout observation.

Since 1926 we have seen 9 such patients, all of them in consultation, weeks and months after bloodstaining and secondary glaucoma had occurred, and in none of them was any useful vision restored even though the cornea cleared. The injured eye of 4 patients had to be removed because of intractable pain or unsightly appearance, and 1 of these patients developed sympathetic ophthalmitis and also lost the sympathizing eye.

In addition to the foregoing, hyphemia and increased pressure may result in an essential type of iris atrophy continuing to total aniridia, as illustrated by the following case report:

K. W., a child aged 11, was seen eight weeks after an injury to the left eye in which hyphemia occurred and no treatment but atropine was given. Bloodstaining was present and the pressure was 45 Schiötz. Miotics were prescribed and clearing of the cornea gradually ensued, after which it was possible

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to see the iris for the first time. Atrophy of isolated areas was observed, which gradually enlarged to coalescence and eventually the entire iris was absorbed. Traumatic cataract was present and visual acuity was restricted to hand movements. Intraocular pressure after three years was 18 Schiötz.

As a result of clinical experience we attempted in cases seen early enough to relieve the embarrassed drainage apparatus of the anterior segment by temporarily reducing the increased pressure by simple paracentesis. Results were uniformly favorable, although surgery was occasionally repeated once or twice before secondary hemorrhage ceased. This was easily accomplished by inserting a spatula in the anterior chamber through the original paracentesis wound, which was uniformly made at the temporal limbus. Occasionally the paracentesis was done by the subconjunctival route, but usually it was transcorneal. There seems to be little danger of infection by this procedure. We have never seen an infected paracentesis wound even in the presence of purulent corneal ulcer.

Some writers have advocated lavage of the anterior chamber as though the presence of the blood clot in the anterior chamber was the main factor influencing the production of keratohemia. We have found this to be unnecessary. Although we have attempted it on numerous occasions, we have never been successful in washing the chamber completely free from bloodclot and finally observed that the patients in whom simple paracentesis was the only procedure did as well as the others. Since it is difficult to follow the irrigation tips through the bloodclot, the iris and lens may unwittingly be injured by instrumentation and we believe this procedure to be both dangerous and unnecessary. Simple reduction in intraocular pressure is the desired effect of surgery and, if a little blood or serum is evacuated by paracentesis, readjustment of the intraocular factors of hydrodynamics is usually established.

Since most of these injuries happen to youngsters, examination is often difficult and there is a tendency to postpone surgery because of the danger of postoperative hemorrhage due to the noncooperation of the patient and the reaction to general anesthesia which must occasionally be employed. However, these possibilities must not be allowed to sway the surgeon's judgment, for when surgery is imperative delay is disastrous. Constant attention must be given to the hydrodynamic situation and an attempt made to keep the pressure within the eyeball at a normal level by miotics.

Prevention of secondary hemorrhage was attempted frequently by the intramuscular injection of calcium gluconate and hemoplastic serums. We cannot be certain that any of these were of value.

Thirteen patients with traumatic hyphemia and increased intraocular pressure were treated by paracentesis with gratifying results. A few had other complications such as partial traumatic cataract which resulted in diminished visual acuity, but most of them were comparable to the following case report:

J. M. H. Jr., a boy aged 15, was seen on April 11, 1939 immediately after being struck in the left eye by a thrown baseball. The anterior chamber was half filled with blood. Atropine and bed rest were prescribed, but three days later a secondary hemorrhage filled the anterior chamber and the pressure was 48 Schiötz. Paracentesis was done at once and repeated the following day, as no clear aqueous or iris could be seen. No further hemorrhage occurred and the pressure was controlled by physostigmine. Vision was very poor because of hemorrhage which had extravasated into the vitreous, but after three years this cleared entirely and final acuity was recorded at 6/5.

The singular success which follows the use of miotics combined with paracentesis in controlling traumatic hyphemia raises the question as to whether our usual treatment with atropine following initial hyphemia is correct. Although atropine dilates the iris, thereby compressing the iris stroma and the blood vessels it contains, secondary hemorrhage from the injured iris vessels occurs frequently; on the other hand, physostigmine constricts the pupil and allows the iris vessels to become stretched. This factor may of itself inhibit secondary hemorrhage. Our records permit of no conclusions with regard to this theory. Of the thirteen patients treated surgically with satisfactory recovery, 11 were receiving atropine and 2 physostigmine after atropine originally, prior to the secondary hemorrhage and rise in pressure which required paracentesis. Many, many more patients must receive miotics immediately after injury before the relative merits of this form of treatment can be determined.

CONCLUSIONS

1. Traumatic hyphemia may be controlled by simple paracentesis of the cornea and the instillation of miotics.

2. Surgery should be accomplished without delay whenever the intraocular pressure is increased or no clear aqueous is visible in the anterior chamber.

3. It is possible that the use of miotics rather than mydriatics immediately after injury will result in less secondary hemorrhages and less necessity for surgical procedures.

130 Madison Avenue.

ABSTRACT OF DISCUSSION

Dr. F. Bruce Fralick, Ann Arbor, Mich.: Partial filling of the anterior chamber (hyphemia) is not an indication for paracentesis. These fillings usually absorb in a few days and seldom cause any elevation in tension. Complete filling of the anterior chamber with blood is definitely an indication for paracentesis, whether the tension is elevated or not. One should not wait for tension elevation before doing paracentesis. Our primary problem should be to prevent secondary glaucoma rather than to correct it once it has developed, since it is the secondary glaucoma which is responsible for the corneal blood-staining in the presence of anterior chamber hemorrhage. The blood will often absorb uneventfully without paracentesis, but since paracentesis is such a safe operative measure its utilization will prevent the serious complication of blood staining of the cornea. This measure is employed in our clinic when the anterior chamber becomes completely filled with blood in severe iritis, after intraocular surgery or after trauma. By its judicious use the course of the absorption period has been shortened and the incidence of bloodstaining of the cornea has been lowered. My associates and I employ atropine in eyes displaying traumatic hyphemia with the thought of combating the associated iridocyclitis. Dr. Rychener has suggested that miotics be used in place of atropine at this stage. There are no comparable statistics to support this, but from a pharmacologic point of view it would be more acceptable to use a miotic. An ocular trauma effecting sufficient damage to cause hyphemia cannot but help produce engorgement and edema of the anterior uvea. If atropine was instilled at this stage it would only tend to increase the vascular stasis in the anterior uvea, producing greater tissue edema and an increased tendency to hemorrhage. The hyphemia may act as a ball thrombus and, in combination with the highly protogenous aqueous, could easily give rise to secondary glau-

coma. On the other hand, the edema and engorgement of the anterior uvea produced by trauma could be lessened by the use of a miotic, since its combined action is to abolish engorgement. This would tend to lessen the production of a highly protogenous aqueous and would promote more adequate drainage of the anterior chamber. From a theoretical point of view, at least, the use of a miotic early in the post-traumatic period during the acutely hyperemic stage might have a much more favorable effect than atropine. I am of the opinion that, even after the initial period of hyperemia has disappeared, atropine would still be indicated should circumcorneal flush and ciliary tenderness develop, indicating the appearance of an iridocyclitis.

DR. HUGO L. BAIR, Rochester, Minn.: I prefer to perform the paracentesis with a keratome, since it provides a large enough opening to permit withdrawal of most of the blood clot and to permit satisfactory irrigation of the anterior chamber with isotonic solution of sodium chloride. The fact that the free blood in the anterior chamber has at least partly clotted suggests that the bleeding points in the eye have probably become thrombosed and that further hemorrhage, as a result of the sudden lowering of intraocular pressure, is unlikely. It is important to withdraw or wash out as much of the clot from the angle of the anterior chamber as is readily possible without causing trauma to the structures there. The mechanism of complete traumatic hyphemia is not understood. Probably in most such cases the hemorrhage arises from traumatic cyclodialysis. One factor that permits such a gross hemorrhage from the ruptured vessels is the hypotony resulting from the contusion of the eye. Another factor must be invoked, however, to explain the failure of the bleeding to stop, as it usually does when a normal iris or ciliary body is cut surgically. This may be an overwhelming vasodilator axon reflex mediated through the trigeminal fibers and caused directly by the contusion. If such vasodilatation is a factor, it would be augmented by the capillary dilatation produced by either atropine or miotics and therefore such drugs would be contraindicated. Another possibility is that the vasoconstrictor mechanism is paralyzed by the trauma. This would explain the occurrence of repeated hemorrhages, especially those following the performance of iridectomy because of the glaucoma. An operation on the iris for the secondary glaucoma in cases in which hematogenous staining of the cornea follows complete traumatic hyphemia is very likely to be followed by recurrence of complete hyphemia.

DR. WILLIAM B. CLARK, New Orleans: I want to thank Dr. Rychener for allowing me the privilege of tacking onto his excellent paper a preliminary report of a method of controlling traumatic hyphemia. The method has been recommended by a member of the surgical staff of one of our general hospitals. This general surgeon has claimed for a number of years that he could control visceral bleeding of minor degree by this method. A white woman aged 58, on whom I performed an intracapsular cataract extraction with peripheral iridectomy, with corneal sutures, awoke on the morning of the seventh day complaining of severe pain in the operated eye. The patient had a hemorrhage into the anterior chamber. She was given sedation, and when I saw her at 8 o'clock the anterior chamber was filled with blood. The corneal wound had apparently not been opened, as the intraocular tension, as taken with fingers, seemed to be definitely increased. She was taken to the operating room and an effort was made to open the corneal wound with an iris spatula. It was impossible to do this, because the wound was so tightly healed, without exerting more pressure than I thought safe. For a period of four days I used intravenous injections of calcium gluconate, intramuscular injections of synthetic vitamin K and Neohemoplastin. After the second day, when there had been no improvement in the patient's condition, I used an injection of 10 cc. of the patient's own blood taken from her vein and injected into her gluteal muscle. This was repeated on the following day without objective improvement. The symptoms of secondary glaucoma were increased. The patient was then taken off of all food and liquids and was given, every two hours, a mixture of 2 ounces of white Karo corn syrup to 6 ounces of fruit juice, either grapefruit, orange or pineapple. This is all the patient received, except drugs for sedation, for a period of more than six days. At the end of the first twenty-four hours the iris could be seen, and there was a blood clot in the nasal quadrant of the anterior chamber, apparently where the corneal wound had ruptured internally and bled inside the eye. At the end of forty-eight hours the anterior chamber was entirely free from blood. At the end of seventy-two hours a good retinal reflex could be seen, and at the end of four days the vitreous was free from blood and the fundus could be clearly seen with an ophthalmoscope. The diet was continued for two days without recurrence of bleeding. Six weeks from the date of the patient's operation her corrected vision was 20/20. To date we have treated 3 cases of traumatic hyphemia with equally good results. I am unable to explain the physical principle or biochemistry involved, but I expect to pursue the subject further.

DR. PAUL A. CHANDLER, Boston: I have been accustomed to distinguishing two types of hyphemia. In one, no portion of the iris is visible, and the color of the blood is almost black. In the other there is some portion of the iris visible and the color of the blood is red. The surface of the clot in the former case, where the blood is black, is homogeneous. In the second case one can see structure in the clot. In those in which the anterior chamber is black with blood and the pressure is elevated I have been accustomed to wash the clot out of the anterior chamber. In these cases the pupil is always dilated because of the high pressure and I have never seen a prolapse of the iris. To wash the clot out of the anterior chamber is a difficult procedure, but there is one method which is relatively safe and will succeed in washing out the entire blood clot in almost all cases. I use a middle ear irrigating bulb with a metal tip. After a keratomé incision, just at the moment the tip enters the chamber, I make quite a little pressure on the bulb. This keeps the chamber formed all the time, and with the tip of the irrigator one can sweep around the anterior chamber and loosen the clots. In the other cases in which any portion of the iris is visible and the blood is red, I thoroughly agree with Dr. Rychener that irrigation of the anterior chamber is entirely too radical a procedure. A simple paracentesis can be done if necessary, but in all cases before paracentesis he is right in emphasizing the great importance of miotics rather than mydriatics. Mydriatics can be used later on after the blood is absorbed. Hot compresses should not be used in this type of hyphemia or in any other type. I have had the experience of using hot compresses and having fresh blood in the chamber every day, and as soon as I discontinued the hot compresses the bleeding ceased.

DR. RALPH O. RYCHENER, Memphis, Tenn.: As Dr. Fralick has brought out and Dr. Chandler just mentioned, the necessity for atropine at a later period is evident. The time at which to use this atropine becomes one of somewhat technical decision, but as soon as all of the blood has been absorbed and the patient has gone for at least twenty-four hours without further hemorrhage it is probable that atropine can then be used safely. Dr. Chandler also mentioned the matter of sweeping around the anterior chamber with the irrigator tip, which is a method that we have used successfully too; but, as I brought out, it is not without its dangers, because we can't always tell where the lens and the iris are. Dr. Clark's method of treatment, of course, is one of experiment and in the conjectural stage. The eyes that I was talking about in this paper were those in which no lacerations of the sclera or cornea occurred but were simply following contusions of the eyeball. It seems that there is some difference in absorption of blood under those circumstances. The bloodstaining of the cornea after anterior chamber hemorrhage following cataract extraction is relatively rare. It occurs only when the hemorrhage has been present for a long time. However, anything which will accelerate the expedition of blood from the anterior chamber is worth while. We don't know whether the mechanics of treatment Dr. Clark uses are those of osmosis which accelerate the elimination of waste product from the anterior chamber or whether there is any actual effect on the prevention of bleeding.

Clinical Notes, Suggestions and New Instruments

STREPTOCOCCUS VIRIDANS SEPTICEMIA-SUBACUTE BACTERIAL ENDARTERITIS OF AN ARTERIOVENOUS ANEURYSM

MAJOR SIDNEY LIPTON AND CAPTAIN HAROLD MILLER
MEDICAL CORPS, ARMY OF THE UNITED STATES

That Streptococcus viridans septicemia associated with cardiovascular disease is a finding of grave prognosis need not be stressed. Its resistance to available therapy is notorious. These coexisting conditions may be divided into three groups:

1. Subacute bacterial endocarditis in which the vegetations are primarily on diseased valvular endocardium.

2. Subacute bacterial endocarditis in which the vegetations occur on congenital cardiac anomalies.

3. Subacute bacterial endarteritis in which the vegetations occur on (*a*) congenital—patent ductus arteriosus, (*b*) acquired—arteriovenous aneurysm.

Surgery has offered dramatic results in cases which fall in the third category. The ligation or excision of the patent ductus arteriosus infected with Streptococcus viridans and resulting cure has received justified prominence recently. Less is known about the effectiveness of surgery in acquired arteriovenous aneurysm.

It is our purpose in this paper to report the surgical cure of a case of Streptococcus viridans septicemia engrafted on an arteriovenous aneurysm. Since this condition is curable, we wish to emphasize the importance of keeping it in mind in differential diagnosis. While the disease is rare, the prospective increase in arteriovenous aneurysms as a result of war wounds may increase its frequency. Thus far only 2 cases of surgical cure of Streptococcus viridans septicemia by means of excision of the infected arteriovenous aneurysm have been reported. Hamman and Rienhoff [1] reported the first cure in 1935 and Touroff, Lande, and Kroop [2] the second in 1942. The present case represents the third such cure.

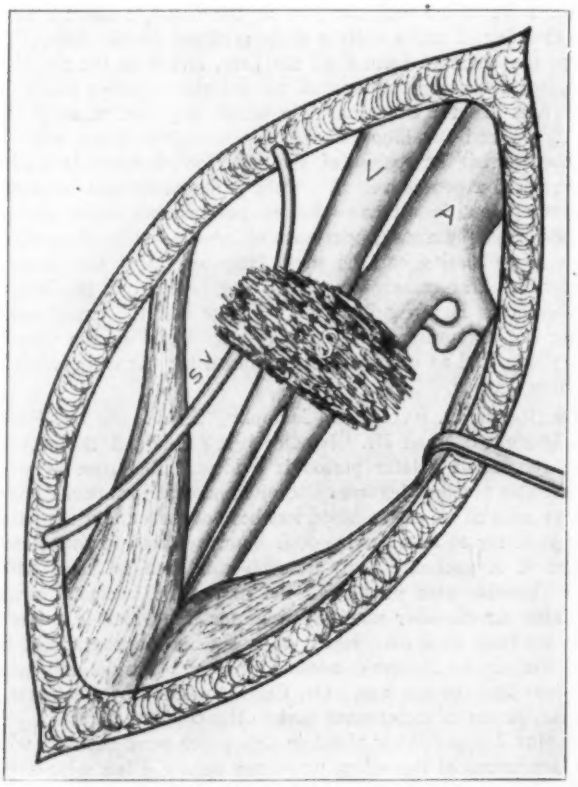

Fig. 1.—Diagrammatic sketch of the operative field. *A* represents the femoral artery, *V* the femoral vein, *SV* the saphenous vein, *S* the scar tissue in which the arteriovenous aneurysm was embedded.

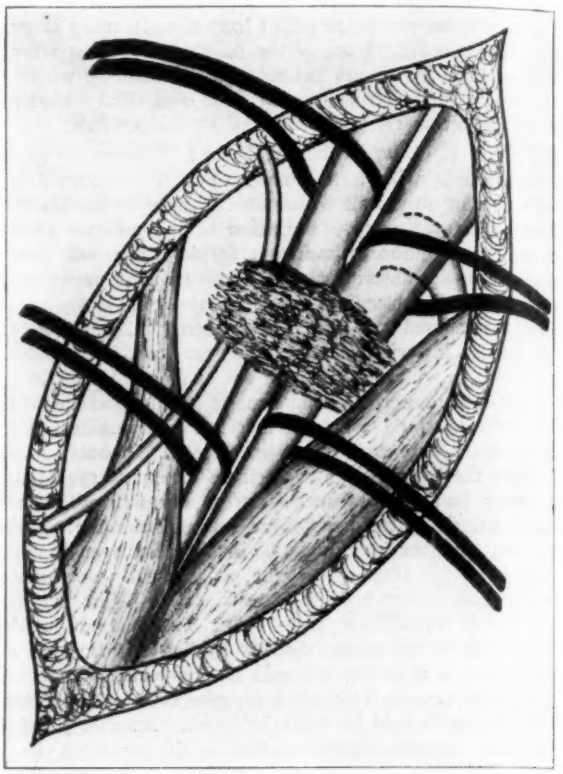

Fig. 2.—The ligatures are in place. The ligature on the femoral artery is placed just distal to the point of origin of the profunda femoris artery.

REPORT OF CASE

History.—A Negro man aged 27 was admitted with the following history: At the age of 12 he accidentally shot himself through the upper left thigh with a 0.22 caliber rifle. The bullet entered anteriorly and passed through the thigh. There was some swelling at the point of entrance of the bullet for a few days, but it healed uneventfully. From that time on the patient was occasionally aware of a pulling sensation in his thigh and noticed a "buzzing" when he placed his hand over the site of the injury. At times the left leg felt cold, and if he walked excessively his entire left lower extremity would swell moderately. He was inducted into the Army in January 1942. He got along well and had no difficulty in keeping up with the stiff military training. In June a tooth was extracted, and the site healed readily. At the beginning of 1943 the patient was admitted to the station hospital for an enlarged gland in the right inguinal region, which was incised and healed uneventfully. At this time the patient's aneurysm of the left thigh was discovered, and he was discharged in April 1943, feeling perfectly well. In October of that year he rather suddenly became ill with a shaking chill, followed by a high fever and much sweating. The fever persisted and he thereafter had two more chills about a week apart. His doctor told him he had malaria and gave him quinine, but the fever persisted, with chills occurring at irregular intervals. His appetite was poor and he lost 30 to 40 pounds (14 to 18 Kg.) from October 1943 to the time of his admission to the Veterans Hospital in February 1944.

From the surgical service of Dr. H. D. Coffee and the medical service of Dr. J. F. Woods, Veterans Administration, Columbia, S. C.

Published with the consent of the Medical Director of the Veterans Administration, who assumes no responsibility for the opinions expressed or the conclusions drawn by the authors.

1. Hamman, L., and Rienhoff, W. F.: Bull. Johns Hopkins Hosp. **57**: 219-234 (Oct.) 1935.

2. Touroff, A. S. W.; Lande, H., and Kroop, I.: Surg., Gynec. & Obst. **74**: 974-982 (May) 1942.

Physical Examination.—On admission he appeared well developed, poorly nourished and chronically ill. The heart was not enlarged on percussion. The sounds were of good quality and there were no murmurs. Blood pressure was 118/82. The only positive findings were present in the left lower extremity. In the upper left thigh there was a small healed gunshot wound. Beneath this scar was felt a small mass which was soft and easily compressible and which gave an easily palpable thrill. The thrill could be felt for several inches above and below the mass. The pulsation of the right popliteal artery was easily palpable, but the left popliteal pulsation was not found. The pulsations in the dorsalis pedis and posterior tibial arteries of each foot were easily palpable. The temperature of the two legs was grossly equal. No sensory changes were present. During the preoperative period of observation the temperature took a low grade septic course, the peak of the temperature ranging around 100 F. daily. The pulse ranged between 80 and 130.

Laboratory Studies.—The routine blood count and urinalysis were entirely normal. The sedimentation rate was 103 mm. per hour (Westergren); agglutinations for the typhoid-dysentery group were negative; blood culture on two occasions was positive for Streptococcus viridans, yielding 50 colonies per cubic centimeter. X-ray examination of the heart showed a moderate increase in size. An electrocardiogram showed a tendency to right axis deviation, abnormal P waves in leads 2 and 3, diphasic and slightly slurred QRS complexes in leads 1, 2 and 4, and notching of the T wave in lead 4. A diagnosis of infected arteriovenous aneurysm was made, and the patient was prepared for operation.

Operation (by Major Lipton).—With the patient under spinal anesthesia a longitudinal incision was made on the upper

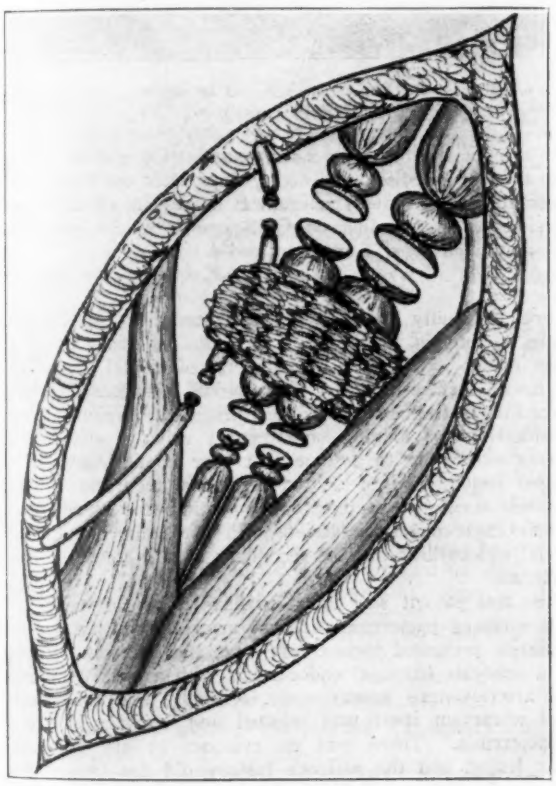

Fig. 3.—Quadruple ligation of the femoral artery and vein.

anterior surface of the left thigh following the course of the femoral artery. The superficial fascia was divided. At the lower angle of Scarpa's triangle the femoral artery and vein were fused, the junction being bound down in scar tissue. There was a small aneurysmal dilatation of the femoral artery on its lateral aspect at this point. The saphenous vein and nerve were also bound in the scar. The proximal portions of the femoral vein and artery were dilated. The distal segments did not appear appreciably enlarged. A distinct thrill was present in the region of the arteriovenous aneurysm. The proximal portions of the femoral artery and vein were dissected down to the cicatrix. The distal portions of the artery and vein were treated in like manner. Quadruple ligation of the proximal and distal portions of the artery and vein was per-

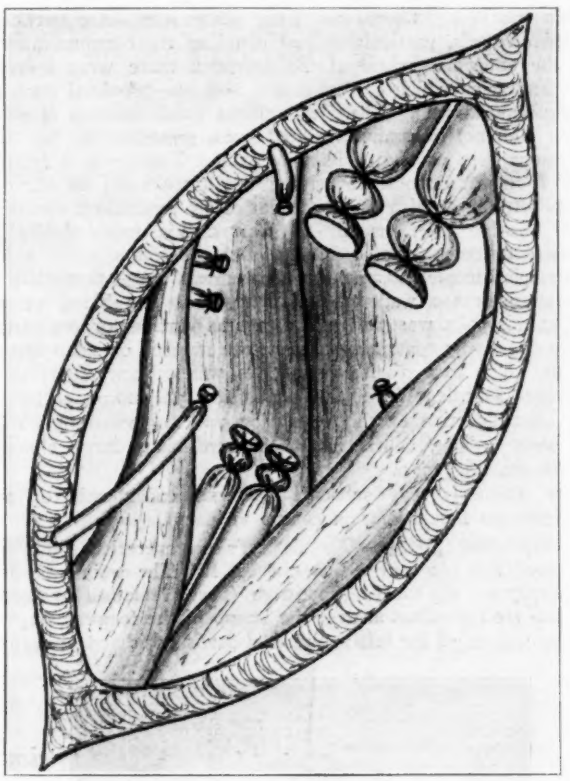

Fig. 4.—The scar and its contained arteriovenous aneurysm have been removed.

formed, the proximal ligation being done just distal to the origin of the profunda femoris artery. The artery and vein were then severed. While this was being done the profunda femoris artery was accidentally wounded. The wound was repaired by over and over suture with cotton, and the hemorrhage was satisfactorily controlled. Transfixion sutures of No. 1 chromic were applied to the arterial and venous stumps. The arteriovenous aneurysm was then dissected out, numerous tributary branches on its posterior aspect being clamped and ligated. The branch of the saphenous nerve caught in the scar was sacrificed. A rubber tissue drain was inserted in the raw bed, and the skin was closed with continuous locked dermal suture.

Pathologic Examination (by Major Roy Barnett, M. C., A. U. S.).—Grossly the specimen consisted of a portion of tissue 8 cm. in length and approximately 4 cm. in diameter. Basically it was composed of a portion of femoral artery, a portion of femoral vein, an abnormal communication between the two, small tributaries of vein, and areolar and scar tissue. The abnormal fistula was located approximately in the mid-portion of the large artery and vein. The walls of the two vessels were fused above and below the fistula so that there was formed a communicating orifice 2 mm. in length and approximately 6 mm. in diameter. The artery was somewhat dilated above the fistula, with an average circumference of 2 cm. Distal to the communication it was narrowed, being only 1 cm. in width. The vein was approximately 1.5 cm. in circumference distal to the lesion and 2.5 cm. in circumference proximally. Opposite the communication was a small aneurysmal bulge in the arterial wall 1 cm. in diameter and 1 cm. in depth. There was a similar lesion in the vein opposite the fistulous opening. Particularly on the arterial side there were numerous small vegetations both within the artery and in the small true aneurysm. Most of these vegetations were smooth,

pedunculated and about 2 mm. in greatest diameter. There was a larger one which was friable, mottled red and yellow and 6 cm. in diameter. There were small pedunculated vegetations within the communication and in the wall of the vein opposite it. The wall of the vein was definitely thickened opposite the fistula and slightly thickened proximally to it. Just distal to this fistula there were two large competent valves within the vein. There was dense white scar tissue between the two vessels, particularly just distal to the communication. On the anterior surface of the specimen there were several tributary veins which communicated with the proximal portion of the femoral vein. There was also a small segment of vein which did not communicate and was presumed to be the saphenous vein or one of its tributaries. There was a lymph node 2 cm. in diameter overlying the latter vein; on section it was soft and grayish black. Smear of the vegetations revealed gram positive cocci, usually in short chains, morphologically identical to those isolated from the blood stream.

For microscopic examination section was made through the vegetation in the wall of the aneurysm. The blood vessel wall at this point was made up of parallel lamellae of hyalinized connective tissue containing a moderate number of small blood vessels. The base of the vegetations was cellular, containing numerous succulent fibroblasts and a few polymorphonuclears. The apical portion of the vegetation was composed of fibrin and pink staining débris in which were many large clumps of blue staining cocci.

The diagnosis was subacute bacterial endarteritis of an arteriovenous fistula (Streptococcus viridans).

Postoperative Course.—The patient's postoperative condition was good and his course was uneventful. The wound healed completely and the thrill disappeared. There remained an easily palpable strong pulsation over the stump of the femoral artery. The pulsations of the left popliteal, dorsalis pedis and posterior

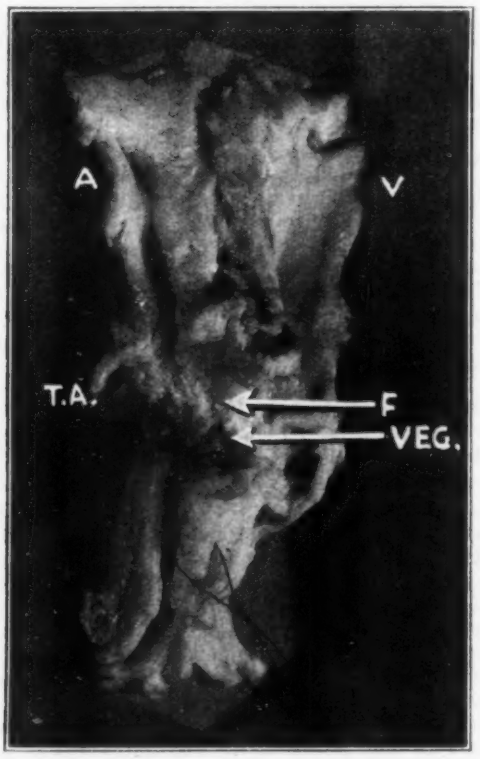

Fig. 5.—Appearance of specimen: *A*, femoral artery; *V*, femoral vein; *F*, the arteriovenous fistula; *VEG*, vegetations; *TA*, true aneurysm of femoral artery.

artery were not palpable, but the temperature of the two lower extremities was equal. The patient developed no signs of circulatory insufficiency on walking. A small area of anesthesia on the medial aspect of the leg from the knee to the midtibia resulted from the excision of the section of saphenous nerve. The pulse rate after the second postoperative day ranged usually between 80 and 90. He had a low fever up to 99.6 F. for about ten days and thereafter was afebrile. Blood cultures taken on several occasions during the next two and one-half months were negative. His appetite was good and he gained 12 pounds (5.4 Kg.).

Fig. 6.—Microscopic section through one of the vegetations. Notice the dark staining clumps of bacteria.

The size of the heart on x-ray examination did not change at the time of his discharge, eighty days after operation. The electrocardiogram showed normal P waves in all leads and a persistence of the diphasic QRS complexes in leads 1, 2 and 4, and an inverted T wave in lead 4.

COMMENT

There frequently occur transient periods of Streptococcus viridans bacteremia, notably in acute sinus infections [1] and following dental extractions. A history of dental extractions some months before the onset of symptoms of subacute bacterial endocarditis is frequently obtained. Since the organisms have a predilection for lodging on damaged valvular endothelium, it seems reasonable to assume that they could lodge on the damaged endothelium of an arteriovenous aneurysm as well. From this focus the bacteria can pour into the blood stream and may cause metastatic lesions. In this manner a subacute bacterial endocarditis may be secondary to a subacute bacterial endarteritis.

When this patient was found to have a persistent Streptococcus viridans bacteremia and an arteriovenous fistula, two possibilities presented themselves: one, that he was suffering from a subacute bacterial endocarditis with a coexisting uninfected arteriovenous aneurysm or, secondly, that the arteriovenous aneurysm itself was infected and was the source of the bacteremia. There was no evidence of any congenital cardiac lesion, and the patient's history did not suggest that he ever suffered from rheumatic fever. Since repeated physical examinations of the heart failed to reveal any rough or changing murmurs, the latter possibility was strengthened. It also strengthened our belief that no secondary implantations on the endocardial surfaces of the heart valves had as yet taken place. One other consideration was briefly entertained: this was the possibility that the infected vegetations were on the endocardial surfaces of the heart chambers themselves. This condition, however, is always secondary to valvular involvement.[1] Since we had no evidence of valvular involvement, we dismissed that possibility.

While all the evidence pointed to the infected focus being in the arteriovenous aneurysm rather than in the heart, there was no way to be absolutely certain of this. In weighing the decision as to operation we felt that if the patient had a subacute bacterial endocarditis he would die; if he had an infected arteriovenous aneurysm which was left untreated he would die; but if a complete surgical removal of the focus could be done, and there had been no metastasis, he might be cured. In the light of the success of the other reported cases, surgery was entertained with confidence.

We have endeavored to clarify the problem of Streptococcus viridans septicemia with coexisting cardiovascular disease by presenting an anatomic classification. In certain instances this condition is amenable to surgical cure. Despite the infrequency of this disease, the results of surgical treatment are so successful and dramatic that greater attention should be directed toward this condition in differential diagnoses.

In a case of Streptococcus viridans septicemia due to an infected arteriovenous aneurysm we have outlined the reasoning that led to diagnosis and subsequent surgery. This case is unusual in being the third surgical cure of an acquired arteriovenous aneurysm infected with Streptococcus viridans.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN E. SMITH, M.D., *Secretary.*

DIPHTHERIA TOXOID, TETANUS TOXOID, ALUM PRECIPITATED, COMBINED (See New and Nonofficial Remedies, 1944, p. 563).

The following dosage forms have been accepted:

NATIONAL DRUG CO., PHILADELPHIA

Diphtheria and Tetanus Toxoids Combined: One immunization in packages of two 1 cc. vials and five immunizations in packages of two 5 cc. vials. Preserved with 1:10,000 merthiolate.

E. R. SQUIBB & SONS, NEW YORK

Combined Diphtheria Toxoid-Tetanus Toxoid, Alum Precipitated: 1 cc. and 10 cc. vials in packages of two 1 cc. vials and of one 10 cc. vial.

YEAST EXTRACT CONTAINING VITAMIN B COMPLEX (See New and Nonofficial Remedies, 1944, p. 696).

The following additional dosage form has been accepted:

E. R. SQUIBB & SONS, NEW YORK

Brewers' Yeast Tablets: 0.4 Gm. Each tablet contains 0.4 Gm. dehydrated brewers' yeast supplying thiamine hydrochloride 0.06 mg., riboflavin 0.03 mg., pyridoxine 0.02 mg., pantothenic acid 0.04 mg. and nicotinic acid 0.15 mg.

TETANUS TOXOID ALUM PRECIPITATED (See New and Nonofficial Remedies, 1944, p. 565).

The following additional dosage form has been accepted:

REICHEL DIVISION, WYETH, INC., PHILADELPHIA

Tetanus Toxoid Alum Precipitated (Refined): 50 cc. vials.

NICOTINAMIDE (See New and Nonofficial Remedies, 1944, p. 617).

The following dosage form has been accepted:

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Solution Nicotinamide 100 mg. per cc.: 5 cc. and 10 cc. multiple dose vials. Preserved with 0.5 per cent chlorobutanol.

OCTOFOLLIN (See THE JOURNAL, March 4, 1944, p. 647).

The following additional dosage form has been accepted:

SCHIEFFELIN & CO., NEW YORK

Vaginal Tablets Octofollin: 0.5 mg.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following article. HOWARD A. CARTER, *Secretary.*

HEAT IN SURGICAL AND ORTHOPEDIC CONDITIONS

FRANK R. OBER, M.D.
BOSTON

The use of heat in the treatment of disease and injuries is one of the oldest forms of therapy known to man.

The abuse of heat is a common practice, and there are altogether too many who think that disease can be cured by "cooking." There are also far too many patients being "cooked" because the physician when unable to make a diagnosis prescribes the now popular short wave diathermy treatment, hoping to cure some obscure lesion as a face saving measure. It would seem, then, that there should be some experimental evidence to show when heat is indicated or contraindicated, how often, how long and where it should be applied and, finally, when it ceases to be of value. It must be remembered that there are persons who do not tolerate heat at all; in fact, heat may make them more uncomfortable.

LOCAL HEAT

Locally heat is used in the form of poultices, hot water packs, hot water bottles, electric pads, special electric lamps, arranged singly or in multiples, chemical pads, paraffin baths, short wave diathermy and diathermy.

There are some dangers in the use of local heat. Inflammation and congestion may be increased, and severe burns are not uncommon. The physician may be sued if a patient is burned when heat has been applied by the physician or by an attendant carrying out the physician's orders.

GENERAL HEAT

General heat is used in the form of hot water baths, steam baths, vapor baths, dry thermal cabinets and electric blankets.

There are also dangers in the use of general heat. Thermal cabinets or vapor baths should not be prescribed without safeguards: the patient must be physically able to stand this sort of heat. The temperature should not be beyond the danger point, and the heat should be used only by those who have had experience in its use. Above all, trained attendants must be present at all times.

The objects of heat are to relieve pain, swelling and spasm. It stimulates the circulation, thus permitting the waste products of inflammation to be carried off into the system. Heat should be considered an adjunct to rest, massage and active exercise. It alone does not restore physiologic use of a joint or muscle.

SPECIAL CONSIDERATION

The use of heat is indicated in contusions, strains, sprains, dislocations, fractures, synovitis (except tuberculosis), bursitis, tenosynovitis, back ache, joint stiffness, arthritis, and in infantile paralysis and other conditions.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 18, 1944

HOSPITAL PLANNING FOR POSTWAR EDUCATION

The desire of returning medical officers for additional hospital training after the war is being determined by the Committee on Postwar Medical Service. A preliminary report by Lueth [1] has made possible an estimate of the degree of expansion in house officerships required to meet these demands [2] in addition to providing for new medical graduates. Hospital residencies in general may have to be doubled in number temporarily, although the demands in the various specialties vary considerably.

Each hospital should now determine the extent to which it can increase its house staff in the immediate postwar period without sacrificing high educational standards. Every hospital approved for internships and residencies is now being asked this question by the Council on Medical Education and Hospitals. (See communication to hospitals, Postwar Planning, page 775). Obviously, the degree of expansion can be determined in a given specialty only in relationship to other educational programs of the hospital. Many hospitals have appointed special committees to formulate an overall plan for the institution.

In evaluating available facilities for justifiable increases in the house staff hospitals should have the following possibilities in mind: (1) more effective and extensive use of existing teaching facilities, (2) the employment of house officers who will provide their own living quarters outside the hospital, (3) the greater use of outpatient teaching material and (4) the inclusion of more library, research and basic science work in the educational program.

Depending on the duration of service in the armed forces, all veterans taking residencies or internships, regardless of age, will be eligible for benefits under the "G. I. Bill of Rights," providing $50 per month for men or women without dependents, and $75 for those with dependents. This may supplement such stipends as the hospital otherwise provides. The hospital itself may also receive aid under this bill, which provides for the payment of tuition to an educational institution and states that the administrator is authorized to provide for the payment, not to exceed $500 for an academic year,[3] even if the institution does not have an established tuition fee.

The assembled information regarding numbers of house officerships will be published and made freely available to medical officers. Hospitals should report the total positions even though some of these are now filled by house officers, and some may be held for officers to whom the hospital may have made commitments for future appointments. In any case the hospitals themselves will continue to select and appoint their house officers, as in the past.

The medical profession is obligated not only to the officer desiring further training but also to a maintenance of the high quality of medical care in this country. The current house officer shortage is far more than a current difficulty; it represents an educational deficit which will be reflected in a poorer quality of medical care unless it is corrected. The heads of departments and services should collaborate closely with the hospital administration in any early formulation of postwar educational plans.

1. Lueth, Harold C.: Future Educational Objectives of Medical Officers, J. A. M. A. **125:** 1099 (Aug. 19) 1944.

2. Johnson, Victor, and Arestad, F. H.: Educational Facilities Required for Returning Medical Officers, J. A. M. A. **126:** 253 (Sept. 23) 1944.

3. Graduate Education of Physician Veterans, Report of the Subcommittee of the Committee on Postwar Medical Service, J. A. M. A. **126:** 709 (Nov. 11) 1944.

THE PATHOGENIC ACTION OF BIOLOGIC COLLOIDS

Biologic research has been concentrated in recent decades on the study of the chemical character and reactivity of relatively small molecular substances and of their role in normal and abnormal vital processes. The physical and physicochemical phenomena of life have attracted much less attention, in spite of the fact that they are as important as the chemical ones for regulating and maintaining the function and structure of the organism. These physical aspects are closely related to the presence, the character, the status, the quantity and the quality of the macromolecular and colloidally dispersed substances (proteins, polysaccharides, lipoids) which represent the most important building material of living matter; they are responsible for its structure and organization and play a major role in the vital dynamics of intracellular and extracellular substances. These agents differ greatly not only in their chemical composition, spatial arrangement and configuration but also in their ability to form gels and sols, in their adsorptive properties, in their hydrophilic and hydrophobic properties, their water binding power,

their degree of dispersion, their electric charge, their surface tension, their coagulability, their colloid osmotic pressure and their colloidal stability.

Quantitative and qualitative disturbances of the macromolecular and colloidal status of the blood and tissues are associated with many diseases and account for some of the symptoms observed.[1] Thus, the edema which accompanies nephrosis, hepatic cirrhosis, sprue and starvation is the result of the osmotic deviations caused by the hypoproteinemia found in these conditions. The afibrinogenemia of the congenital or acquired types is responsible for the associated hemorrhagic diathesis. Hyperfibrinogenemia and hypercholesteremia ensue from the organic effects of saponin poisoning, while hyperglobulinemia accompanies immunity reactions, myelomatosis and amyloidosis. Hyperglycogenemia is found in von Gierke's glycogen storage disease, whereas hypercholesteremia is associated with diabetes mellitus, hypothyroidism, obstructive jaundice, pregnancy, starvation, nephrosis and essential xanthomatosis. Retention of the colloidally dispersed hematic material in the cells of parenchymatous organs characterizes both disturbances.

Qualitatively abnormal and often pathogenic macromolecular substances are the virus proteins, the "milk factor" in mammary cancer of mice, the proteinic antibodies (involved in the production of serum disease, anaphylaxis and allergy), the megalomolecular plasma proteins occasionally observed in myelomatosis, the amyloid and hyaline proteins and possibly also the glycogen found in von Gierke's disease. The biologic importance of abnormal macromolecular or colloidal substances as pathogenic agents is increased by considering the numerous agents of this type which are introduced parenterally into the body for diagnostic, therapeutic or experimental reasons, such as plasma, plasma globulin, plasma albumin, hemoglobin, antiserum, gelatin, isinglass, gum arabic, pectin, polyvinyl alcohol, polyvinyl pyrrolidon, methyl cellulose, glycogen, starch, inulin, congo red, Evans blue and metallic colloids.

These exogenous colloids, like those normally or abnormally generated in the organism, favor, when present in excessive amounts, the conglomeration and sedimentation of the erythrocytes, elicit, after their introduction into the blood, a transitory colloidoclastic leukopenia and not infrequently may interfere with the clotting process of the blood. The repeated and prolonged intravenous injection of these agents may result in the development of a severe anemia and may be associated in many of these substances with their storage in the reticuloendothelial cells of the liver, spleen and lymph nodes and in the histiocytic cells and parenchymatous cells of various organs, especially the liver and the kidney, where they cause functional impairment. The carbohydratic macromolecular colloids, like the lipoidal ones, moreover give rise to the development of foam cellular atheromatous deposits in the arteries, while the proteinic colloids may participate in the formation of hyaline and amyloidotic vascular lesions.

Although great strides have been made in recent years in advancing the knowledge of industrially important macromolecular and colloidal agents, especially those employed in the manufacture of rubber, textiles and plastics, the progress made in connection with the biologically significant macromolecular substances has been less striking. The industrial accomplishments, however, suggest that the application of information and investigative methods gained in the industrial field, combined with an equal amount of effort to the biologic macromolecules, may yield similar fruits and may open the way for an effective approach to a number of important medical problems, such as the genesis and prevention of cancer and degenerative vascular diseases, the nature of and defense against viruses, the production of artificial antibodies and the development of synthetic plasma substitutes.

1. Hueper, W. C.: Macromolecular Substances as Pathogenic Agents, Arch. Path. **33**: 267 (Feb.) 1942.

EYE EXERCISES FOR DEFECTIVE VISION

Revival of interest in the unorthodox methods of treating visual defects, the result of Mr. Aldous Huxley's "The Art of Seeing," was discussed in THE JOURNAL June 31, 1943.[1] In his youth Mr. Huxley suffered an attack of keratitis punctata which left one eye just capable of light perception and the other with about 5 per cent of normal vision. After about a quarter of a century of struggling with increasing visual difficulties he met a woman disciple of the late Dr. Bates, and she initiated him into the regimen of "blinking," "winking," "nose reading," "palming" and "sunning." Within a couple of months, he reports, he had learned to read without the aid of artificial lenses and could also read without strain and fatigue, for he had learned to avoid the conditions making for strain and to get rid of fatigue as soon as it began to manifest itself. Mr. Huxley believes that all defects of vision can be cured by the induction of cerebral and ocular "dynamic relaxation."

Bates's hypothesis that visual derangements and refractive errors are due to a deformation of the eyeball, resulting from nervous and muscular strain of the superior and inferior oblique muscles, and that the ciliary muscle has nothing to do with the focusing of the eye, is contrary to well established scientific and clinical observations. Huxley himself admits that his visual acuity has not improved. His point is that he has learned how to use what he has to better advantage.

1. Aldous Huxley's Vision, Current Comment, J. A. M. A. **122**: 951 (July 31) 1943.

Lancaster,[2] in a recent contribution, advances the thought that "buried in a mass of what to ophthalmologists seem foolish gestures and performances, best defined as hocus pocus, there are sound and fruitful ideas." He would remind the ophthalmologists that seeing is only half ocular; the other half is cerebral. Since seeing is only partly a matter of the image on the retina and the sensation it reproduces and is in still larger part a matter of the cerebral process of synthesis, in which memories play a principal role, it follows that by repetition, practice and exercise one builds up a substratum of memories useful for the interpretation of sensations and facilitates syntheses which are the larger part of seeing.

This physiologic concept of the function of vision is not new. As Duke-Elder [3] points out in his review of Huxley's book, visual defects are sometimes muscular in origin, sometimes psychologic. The competent ophthalmologist treats the former with curative exercises, while the latter requires the psychologic approach. Lancaster feels, however, that ophthalmologists have largely neglected this field and have concentrated their attention on the primary source of sensation, the image on the retina, leaving to irregular half trained workers the cultivation of what he considers a fruitful field of therapy.

Current Comment

YELLOW FEVER CONTROL DURING THE WAR

C. L. Williams, medical director, U. S. Public Health Service, notes [1] that the United States Public Health Service became aware of the danger of the introduction of yellow fever into the southern United States with the onset of war. Infection may be brought by an infected mosquito that may be carried in the cabin of an airplane coming from infected areas; also by a passenger who has been infected and is still in the incubation period but without symptoms. The more real danger is introduction of infected passengers still in the incubation period. Two measures are in operation against this: The more positive is immunization against yellow fever of all military personnel sent to infected areas and most civilians going from this country to such localities. The U. S. Public Health Service placed the yellow fever program in the hands of the field office of Malaria Control in War Areas principally because it possessed the necessary organization, trained personnel and specialized material and supplies. That office, according to Williams, established in cooperation with the director of U. S. Public Health Service District No. 4 a definite plan of procedure which it is prepared to put into operation within twenty-four hours in any locality in the usually accepted infectible area. The control program is based on four specific operations: control of cases and contacts, destruction of adult Aedes aegypti, immunization of possibly exposed persons and control of Aedes aegypti breeding. The first of these operations is the function of the local health department. It involves immediate isolation of cases and contacts in mosquito free and mosquito protected premises. To destroy adult Aedes aegypti the Malaria Field Office has two trucks equipped and ready to move to any place in the country. These trucks carry an adequate supply of pyrethrum solution and pressure and power sprayers of various types. The U. S. Public Health Service maintains at its laboratory in Hamilton, Mont., a stock of half a million or more doses of yellow fever vaccine available at any time for purposes of yellow fever control. A telegram or long distance telephone call would have this vaccine dispatched in adequate quantities by airplane within a few hours. This vaccine does not contain human serum, and its use has not been attended with the development of outbreaks of jaundice. The administrative details that offer difficulty are those required to set the program rapidly into operation. However, these for the most part have been already determined, and the personnel who will give the orders have been designated. The Public Health Service in this work expects to carry out the program in cooperation with the state health departments. It would proceed much as does malaria control in war areas through the state health organizations, which would impose the authority of the state utilizing the technical advice and guidance of the expert personnel supplied by the Public Health Service. Probably this emergency will not arise. Williams believes that we may go through this war without the occurrence of outbreaks of yellow fever. If it should occur, however, we shall be prepared to insure its immediate detection and rapid control.

WHAT CAUSES MONGOLISM?

Certain factors which have been suggested as having a direct influence on the development of mongolism by affecting the pregnant uterus are ill health of the mother, exhaustion, increased amniotic pressure and defective nidation. The possible role of each of these in over 100 cases of mongolism has been recently reviewed by Engler.[1] As a result he believes that an unhealthy condition of the mucous membrane of the uterus at the time of implantation of the impregnated ovum, based on a morbid heredity, seems to be the chief cause of mongolism. A factor which contributes to this unhealthy condition, he says, is miscarriage, whether or not this is brought about by curettage or by the use of abortifacients. The evidence on which this opinion is based appears scanty and less convincing than other theories such as advanced maternal age, which have been previously discussed in these columns.[2]

2. Lancaster, W. B.: Present Status of Eye Exercises for Improvement of Visual Function, Arch. Ophth. **32**: 167 (Sept.) 1944.
3. Duke-Elder, Stewart: The Art of Seeing by Aldous Huxley, Book Review, Arch. Ophth. **30**: 582 (Oct.) 1943.
1. Williams, C. L.: Yellow Fever Control During the War, Am. J. Trop. Med. **24**: 245 (July) 1944.

1. Engler, M.: Causation of Mongolism, J. Neurol., Neurosurgery and Psychiat. **7**: 27 (Jan. & April) 1944.
2. Maternal Age and Mongolism, Current Comment, J. A. M. A. **111**: 257 (July 16) 1938.

MEDICINE AND THE WAR

ARMY

CONVALESCENT RECONDITIONING

Colonel Augustus Thorndike
Chief of the Reconditioning Division, Office of the Surgeon General, U. S. Army

Reconditioning, which has been described as planned convalescent care, was inaugurated by the Surgeon General of the U. S. Army Medical Department in a War Department order dated Feb. 11, 1943. Thus was begun a vast program designed to speed convalescence, to employ the patient's time profitably, both mentally and physically, and to decrease the incidence of complications. Over 100,000 patients are now participating in reconditioning daily in every Army hospital in the United States. More than three fourths of these are in Army Service Force hospitals and the remainder in Army Air Force hospitals. Over 13,000 patients are being reconditioned and returned to duty each week.

Convalescent reconditioning is now firmly established as an integral part of the treatment of the sick and wounded soldier. Continuity of operation has been achieved. Starting from the patient's initial hospitalization in an overseas theater, reconditioning is carried on in station and general hospitals in the theater. It is then continued on hospital ships and finally in the general hospitals in the continental United States. These objectives are primarily the return of the wounded or sick soldier, as rapidly as possible, to duty physically and mentally fit to perform his assigned duties and, secondarily, should individual disability preclude military service, to return the soldier to civilian life prepared to make a happy and useful adjustment mentally and physically.

Reconditioning is accomplished by the scientific scheduling of a program for mental and physical restoration according to the needs and abilities of each individual patient. It cannot be overemphasized that reconditioning is a form of therapy, that it is an important part of established medical or surgical procedures and that it must be prescribed individually in order to accomplish the maximum results.

The Surgeon General's Reconditioning Program is divided into four main phases: physical, educational, occupational and recreational. The physical portion of the program is designed to allay the deteriorating factors coincident with recumbency in bed by the use of special bed exercises designed to maintain body tone and vigor and, when indicated, is often focused to strengthen a particular portion of the body. As the patient's strength increases and he becomes ambulant, these exercises are gradually increased in tempo and dosage and are supplemented by various types of athletic games and recreational sports. Physical therapy, when indicated, is coordinated with this regimen.

The educational phase of the program is designed to effect orientation to personal problems incident to illness and disability, instil the will to fight in those who will return to duty and to aid the adjustment of the discharged soldier to resume his civilian status. The latent talents and interests of the patient are explored and he is given the opportunity to obtain instruction in the various arts and sciences as provided by United States Armed Forces Institute courses and by special classes organized in such subjects as radio, automotives, motor mechanics and graphic arts and other such educational features. Vocational training is not undertaken in U. S. Army hospitals, as this is a function of the Veterans Administration. An important part of this educational program is provided in the release of information, the presentation of orientation subjects, discussion groups, music and the drama. As the war proceeds, the emphasis in educational reconditioning is being directed to returning the soldier to civilian life, and therefore greater effort is being made to explore the talents of the individual and to encourage him to pursue further these interests on discharge from the Army.

The orientation portion of the program is one of the most important, as the soldier returned from an overseas hospital generally finds the adjustment to life at home perplexing. If he is to become an integral part of our democracy again, his relationship to the other groups and individuals who make up our body politic must be clearly demonstrated to him. Not only is the wounded soldier a man who has the ordinary difficult problem of adjustment on returning to the United States but also superimposed are the problems of recovering from a disability, the feeling of detachment from reality because of loss of identification with his Army unit and, of course, the uncertainty of his future. Every effort is being made, by means of visual aids, lectures and discussion groups, to demonstrate to the wounded soldier that his performance of duty has been appreciated and that many others too have made sacrifices, but still opportunity is available for him to become a valuable member of the community.

Occupational therapy is an important part of the treatment of many patients. It is used both as a functional and as a diversional type of therapy. Efforts are made to integrate closely the educational activities with the occupational in order to double the effect of each. Coordination of occupational therapy with physical therapy is being effected with good results.

Recreation is recognized as a valuable part of a well organized program. This is presented in many and varied forms including library service, dances, horseback riding, trips to points of local interest, USO Camp Shows and recreational motion pictures arranged with the assistance of the American Red Cross. It is well recognized that for a reconditioning program to be of value it must be of interest to the patient, and all features should be organized in such a fashion as to develop the enthusiasm of all participants.

Recently a paper delivered at the District of Columbia Medical Society on the subject "Reconditioning in Civilian Hospitals" [1] has brought to the fore the possibility of the adoption of such a program in civilian hospitals. The objective of convalescence in both civilian and military medicine is the same, the return of the patient to his normal activities as rapidly as possible. It would therefore seem logical that if this aim has been achieved by the United States Medical Department it would behoove civilian institutions to examine carefully the Army program in order to determine how it might best be adapted to the requirements of civilian medicine.

Various articles have recently been published by Dock,[2] Menninger,[3] Homans,[4] Levine,[5] Albright,[6] Lueth [7] and others showing that complete bed rest is ill advised in a great many types of medical, surgical and mental conditions. It would surely seem that convalescence is a phase of illness which is poorly understood and, in the light of recent developments, needs reexamination and renewed appraisal by the medical profession.

1. Gwynn, H. B.: Reconditioning in Civilian Hospitals, talk delivered at 16th Annual Assembly of the Medical Society of the District of Columbia, Oct. 7, 1944, to be published in the Medical Annals of the District of Columbia.

2. Dock, W. D.: Evil Sequelae of Complete Bed Rest, J. A. M. A. **125**: 1083-1085 (Aug. 19, 1944).

3. Menninger, Karl: Abuse of Rest in Psychiatry, J. A. M. A. **125**: 1087-1090 (Aug. 19, 1944).

4. Homans, J.: Thrombosis of the Deep Veins of the Lower Leg Causing Pulmonary Embolism, New England, J. Med. **221**: 995-997 (Nov. 29, 1934).

5. Levine, S. A.: Some Harmful Effects of Recumbency in the Treatment of Heart Disease, J. A. M. A. **128**: 80-84 (Sept. 9, 1944).

6. Albright, F.: Metabolic Problems Relating to Convalescence, Convalescence and Rehabilitation Report no. 6, Aug. 12, 1944, Committee on Medical Research of the Office of Scientic Research and Development.

7. Lueth, H. C.: A Reconditioning Program for Disabled Soldiers, Illinois M. J. **86**: 93 (Aug.) 1944.

ARMY AWARDS AND COMMENDATIONS

Captain Ralph Schwartz

The Silver Star award has been presented to Capt. Ralph Schwartz, formerly of New York City, for gallantry in action in Normandy, France, on July 29, 1944. The citation states that "Captain Schwartz with a group of enlisted personnel was rendering medical service on the 29th of July, 1944 in a surgical tent located one-half mile north of Notre Dame La Cenilly, France, Coordinates T-376513 Coutances Sheet 6F3, to two United States Army patients and three enemy (German) patients when at 22:20 hours of this date a terrific antiaircraft barrage opened up on a group of enemy planes which were over the area. Captain Schwartz advised his group to place patients under cover and then to find cover for themselves when a cluster of antipersonnel bombs struck surrounding areas, causing about thirty-five casualties in all. As soon as the first attack subsided, Captain Schwartz, who was not injured, organized the uninjured portion of his group and the remainder of the uninjured personnel of this medical section into an active working team of first aid men, litter bearers and ambulance drivers. Captain Schwartz continued working and leading this team through two additional enemy air raids without regard for his personal safety in order that all the wounded might be gathered up and treated and immediately evacuated. He held his men together by words of encouragement, and the fact that he did most of the work himself greatly strengthened the morale and working efficiency of his group. Rapid first aid and evacuation of these casualties under such difficult circumstances could not have been accomplished without Captain Schwartz's gallant leadership and superb supervision." Dr. Schwartz graduated from Long Island College of Medicine, Brooklyn, in 1940 and entered the service March 7, 1942.

Captain Edward C. Edlkraut

Capt. Edward C. Edlkraut, formerly of Passaic, N. J., was recently awarded the Soldier's Medal. He was decorated by Brig. Gen. Walter J. Reed, commanding general of the 7th AAF Service Command, and the ceremonies took place at a base in the Hawaiian Islands. The citation accompanying the award read, in part, "For heroism displayed at the scene of an airplane crash on Dec. 27, 1943. . . . With complete disregard for personal safety, engaged in work of rescuing trapped crew members and putting out fire, a job made doubly dangerous by the presence of leaking gasoline and by the fact that much of the work had to be done in mud and filthy water, which at times reached as high as the waist. . . . Courage and devotion to duty displayed reflected great credit on himself and the military service." Dr. Edlkraut graduated from Georgetown University School of Medicine, Washington, D. C., in 1931 and entered the service in June 1942.

Captain Sumner D. Davis

Capt. Sumner D. Davis, Talladega, Ala., has been awarded the Bronze Star for "heroic achievement in connection with military operations against the enemy near Santa Rosa, Island of Guam, M. I., on Aug. 12, 1944." His citation continues "While accompanying a patrol which encountered heavy enemy fire in a thick jungle area, Captain Davis administered medical aid to members of a patrol who were wounded. He carried them to the ambulance and risked his life to make possible their rapid evacuation under fire. He then aided in evacuating the dead. His conduct was an inspiration to the men of his battalion." Dr. Davis graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons. Baltimore, in 1933 and entered the service Sept. 16, 1942.

Captain Albert H. Braden Jr.

Capt. Albert H. Braden Jr., formerly of Houston, Texas, was recently awarded the Silver Star. According to the citation accompanying the award, "During the night of May 23-24, 1944, an undetermined number of Japanese attacked the perimeter of the unit to which he was attached in New Guinea. With complete disregard for his own personal safety he administered medical care to our wounded and checked the dead, using a flashlight, thereby endangering his own life by becoming a visible target for the enemy. His calmness and devotion to duty under hostile fire reflect great credit on himself and on the military service." Dr. Braden graduated from the University of Texas Medical Branch, Galveston, in 1940 and entered the service Aug. 15, 1941.

Captain Kenneth F. Stotz

The Legion of Merit award was recently presented to Capt. Kenneth F. Stotz, formerly of Chicago. The citation accompanying the award read "For exceptionally meritorious conduct in the performance of outstanding services in the South Pacific Area from March 1942 to May 1944. At New Caledonia Capt. Stotz's unit was assigned to a 100 mile sector and, despite poor roads, he administered efficiently at the aid stations throughout the sector. During the unit's participation in the Guadalcanal campaign he frequently operated aid stations within 25 yards of the front lines and at the cessation of hostilities on that island he set up two small hospitals. An outstanding evacuation system was instituted and maintained by his unit during the Bougainville campaign. Displaying courage and devotion to duty, Captain Stotz performed a major operation under heavy enemy fire, thereby saving the life of a casualty. His foresight and executive and administrative ability contributed in a great measure to his unit's successful operation." Dr. Stotz graduated from Northwestern University Medical School, Chicago, in 1934 and entered the service June 3, 1941.

Major James P. Harmon

Major James P. Harmon, formerly of Clearwater, Fla., has been awarded the Purple Heart and Silver Star for his participation in the invasion of France. The citation for the Silver Star award said, in part, "Major Harmon, wounded by shrapnel and suffering a dislocated shoulder sustained while seeking cover on a beachhead of France in June 1944, assembled his medical section and led it to an inland location where necessary first aid could be administered to the wounded. With utter disregard for his personal injuries and with outstanding devotion to duty, he refused medical treatment until such time as the wounded who had been brought to his aid station had all been treated and made as comfortable as possible. Major Harmon conducted himself with such gallantry and with such skill, expediency and efficiency as to reflect the highest credit on the Medical Department of the Army." Dr. Harmon graduated from the University of Tennessee College of Medicine, Memphis, in 1938 and entered the service in November 1940.

Colonel Silas B. Hays

The Legion of Merit was recently awarded to Col. Silas B. Hays, formerly of Washington, D. C. The citation accompanying the award read "Services from August 1942 to February 1944. As director, distribution division, later enlarged to distribution and requirements division, Office of the Surgeon General, he developed plans and organized the storage and issue activities of the medical department supply operations, including the development of an inventory control system closely coordinated with issues. By use of his extensive knowledge of supply and administration and by close and energetic personal supervision, he effected an efficient supply service during a period of accelerated activation when supplies, trained personnel and facilities were most difficult to procure. Without his inspiring leadership and extraordinary devotion to duty the formation of an outstanding service would not have been accomplished with such success and efficiency." Dr. Hays graduated from the State University of Iowa College of Medicine, Iowa City, in 1928 and entered the service Aug. 1, 1929.

Captain Edward I. Lederman

The Silver Star was recently awarded to Capt. Edward I. Lederman, formerly of Baltimore. The citation read "He was the assistant surgeon of an infantry battalion engaged in combat with a determined group of enemy located in advantageous positions on high ridges on Biak Island, New Guinea, May 28, 1944. Several casualties were incurred, putting a strain on the facilities of the battalion aid station. He therefore moved forward to advance units to render medical assistance with less delay. Under severe fire he gave medical assistance to the wounded and expedited their evacuation to

the rear. During withdrawal from the position across an open beach he stopped to aid a severely wounded man. His outstanding acts required a great deal of courage and initiative, and the results of his work saved the lives of many soldiers." Dr. Lederman graduated from the University of Cincinnati College of Medicine in 1941 and entered the service Aug. 16, 1942.

Major Orren B. Landrum

Major Orren B. Landrum, formerly of Dyersburg, Tenn., was recently awarded the Bronze Star Medal. The citation reads ". . . for meritorious service in action against the enemy in France. From the time his unit first engaged the enemy and all through the campaign of the Cotentin Peninsula, Major Landrum performed the duties of regimental surgeon in an exemplary and outstanding manner. He supervised the evacuation of casualties and the operation of medical stations in the field with a tireless devotion to duty which inspired all members of his command to greater efforts. On one occasion Major Landrum went through an enemy minefield to administer aid to a soldier who had been wounded by an exploding mine." Dr. Landrum graduated from Johns Hopkins University School of Medicine, Baltimore, in 1933 and entered the service in November 1942.

LIFE OF PHOTOROENTGEN FILMS

The principal subject of Technical Bulletin of Medicine No. 99, recently issued by the War Department, is that of improvement in the present method of washing films. The United States Bureau of Standards has established 0.005 mg. per square inch as the maximum permissible concentration of residual hypo. Films with no more than this quantity of hypo, if stored properly, should have a useful life of fifty years. The washing of photoroentgen films is even more critical than the washing of ordinary films, as they require longer wash periods.

SURGICAL AND ORTHOPEDIC CONSULTANTS OF VARIOUS SERVICE COMMANDS

A meeting of the surgical and orthopedic consultants of the various service commands and the Surgical Consultants Division of the Office of the Surgeon General was held recently at the Surgeon General's Office, Washington, D. C., to promote discussion on various problems which arise in different hospitals and other installations throughout the zone of the interior. The representatives of the various service commands were each assigned a subject which represented one of the major problems in his own geographic area.

POSTWAR PLANNING

At the request of the Committee on Postwar Medical Service the following communication has been transmitted by the Council on Medical Education and Hospitals to all hospitals approved for internships, residencies and fellowships requesting their assistance in the expansion of educational facilities, primarily for returning medical officers *(see editorial, page 770)**:*

Studies conducted by the Committee on Postwar Medical Service and the Council on Medical Education and Hospitals indicate that much expansion of educational facilities will be required temporarily to meet the needs of returning medical officers. As shown in the enclosed article on Postwar Planning, opportunities for graduate training in surgery, obstetrics-gynecology, otolaryngology and ophthalmology will probably need to be doubled in number while facilities in urology, internal medicine, orthopedics, pediatrics, pathology, radiology, psychiatry and neurology may require an increase of 30 to 70 per cent. Additional training courses are also needed in the other specialties listed below (see also tables 4, 5 and 7 in the enclosed pamphlet). Medical officers have requested the following types of training.

A. Assistant residencies: First year of general or specialized hospital training following the completion of an internship.

B. Residencies: Continued hospital training beyond the internship and assistant residency levels.

C. Fellowships: These may be similar to residencies but are usually university or medical school appointments offering greater opportunity for the study of basic sciences and research.

D. Full time graduate externships: Assignments to inpatient or outpatient departments or other educational activities without the requirement of hospital residence.

E. Full time refresher courses: Lectures, ward rounds, conferences, clinical demonstrations, practical training. Courses of two to six months' duration are in great demand.

F. Instruction in basic medical sciences: Review courses in anatomy, pathology, physiology, chemistry and other basic medical sciences in connection with hospital residencies or postgraduate studies.

Meeting the requirements of returning medical officers for additional training is a responsibility that rests with the medical profession, medical schools and the hospitals of the United States. We are confident that your hospital will wish to participate in this program in accordance with your ability to offer adequate clinical and teaching facilities. There has been published in THE JOURNAL A. M. A. a statement of the applicability of benefits under the "G. I. Bill of Rights" to house officers and hospitals participating. A reprint will be mailed to you.

Assuming that nearly all of your normal teaching staff will be available within the first year after the war, please indicate the extent to which your hospital will be able to furnish training in any or all of the following divisions, numbering your replies to correspond with each question:

Training requested by medical officers
Allergy
Cancer
Cardiology
Comm. Dis.
Derm. Syph.
Gen. training or mixed res.
Gastroent.
Industrial Health
Int. Medicine
Psychiatry
Neurology
Neur. Surg.
Obstetrics
Gynecology
Ophthal.
Otolaryng.
Orthopedics
Fractures
Pathology
Pediatrics
Public Health
Radiology
Gen. Surg.
Ped. Surg.
Plast. Surg.
Traum. Surg.
Thorac. Surg.
Tuberculosis
Urology
Hospital Administration

1. What is the *total* number of individuals you can accommodate in residencies, assistant residencies and/or fellowships in *each* of such fields listed to the left as are now operating approved residencies or fellowships at your hospital? Specify types and *total* numbers.
2. In what fields not yet approved for residency training can you develop residency programs? What is the *total* number of individuals you can accommodate in *each*?
3. If the hospital is in position to offer full time externship (see D, above), please specify types, length of training and number of individuals that can be accommodated in each *in addition* to those under 1 and 2 (exclusive of undergraduate medical students).
4. If short term refresher courses can be provided indicate types, length of training and number of physicians you can accommodate in each course.
5. Basic medical science instruction: available in hospital....., by affiliation..... Indicate subjects, length of training and number of physicians that can be accommodated in each.
6. Maintenance: Please indicate in connection with each division listed above whether hospital will be in position to provide quarters ....., meals....., laundry....., Monthly stipened (amount).....

May we request that this matter receive your careful consideration and that it be reviewed by the hospital's educational and postwar planning committees, the physicians in charge of the various departments and medical schools with which the hospital may be directly affiliated. The cooperation of your office and the medical staff will be very greatly appreciated.

NAVY

NAVY MEDICINE FEATURED IN SIXTH WAR LOAN DRIVE

Navy medicine will occupy an important place in the Navy Pacific Theater Exhibit at Navy Pier, Chicago, November 18 to December 3, which will keynote the Sixth War Loan Drive. Vice Admiral Ross T. McIntire, surgeon general of the Navy, will visit the exhibit on November 24, "Bureau of Medicine and Surgery Day," and will make a radio address on the care of Navy wounded.

The exhibit will feature the Abbott collection of paintings on naval medicine, first shown during the 1944 convention of the American Medical Association, scale models of a 200 bed advance base hospital on a Pacific Island, the National Naval Medical Center at Bethesda, Md., LSTs converted into casualty carriers and the newest type of hospital ship, which illustrate medical facilities available to America's fighting men.

Outdoor demonstrations have been arranged by the Medical Field Research Unit, Camp Lejeune, North Carolina, under the direction of Comdr. W. N. New. A battalion aid station will be set up identical to those in the Pacific, and a movie showing the training given hospital corpsmen on duty with Marine assault troops will be shown in a quoinset hut. Jeeps, converted to field ambulances, will also be on display. In addition, Camp Lejeune hospital corpsmen will participate in landing operations on the shore of Lake Michigan.

An RD-4 airplane, the type widely used in the Pacific for casualty evacuation, will be on display at the Chicago Municipal Airport, completely equipped with litters and other equipment used in getting wounded men away from the front lines. Members of the Navy's medical, nurse and hospital corps, many of whom have come back recently from combat duty, will be in attendance during the exhibit.

NAVY NEEDS MORE NURSES

A total of 4,000 more nurses are urgently needed by the Navy by June 30, 1945, to maintain the strength of the Navy Nurse Corps at the desired level. With a present strength of 8,700 women in the Nurse Corps, at least 2,000 new recruits are being sought before the end of December 1944 in order to keep pace with the nursing requirements of the still expanding Navy while taking into account separations from the corps.

The Nurse Corps is scheduled to provide three nurses for every thousand men and women in the naval services. This means that the net strength of the Nurse Corps should be approximately 11,500 by next June.

AIRLINE SERVICE TO DELIVER WAR WOUNDED

Capt. James E. Dyer, U. S. Navy, commander of the Naval Air Transport Service, West Coast Wing, recently announced that regularly scheduled airline service was begun to deliver war wounded arriving at San Francisco, San Diego and Seattle from the Pacific area to naval hospitals throughout the country. Preparations have been made to carry approximately 700 patients per month on the new regular service, with special flights to be added as the needs of the service require.

Types of casualties to be transported by air include surgical patients who could not stand prolonged trips and otherwise could not be moved at all, blind patients traveling to the naval hospital at Philadelphia for specialized care, less severe types of tuberculosis to prevent unnecessary exposure of contacts, and cases of mental shock. The Naval Air Transport Service will assist the Navy in its attempts to hospitalize long-time patients nearest their homes whenever possible.

Each insulated plane will carry approximately 17 web litters and will be provided with ground and plane heating equipment. Cabins will be preheated in winter operations to assure safety and comfort of even temperatures. Oxygen for use en route will be available. Liquids for comfort en route will be boarded, and the Naval Air Transport Service has made arrangements with Red Cross mobile units to provide hot food at stops where government facilities are not available. The planes will exchange field litters with the naval hospitals so that patients will not have to be transferred on enplaning and deplaning. Should a Naval Air Transport Service plane be "weathered in" or encounter other operational difficulties en route across the length and breadth of the continent, arrangements have been made to care for patients at the nearest government hospital. Alternate airports with proper facilities have been selected.

Five naval hospitals in the bay area, plus other West Coast medical centers receiving casualties from the Pacific, will be served north, east and south to the Atlantic seaboard by the new Naval Air Transport Service operation. The West Coast Naval Air Transport Service operations, with hospital officers appointed for each squadron, were set up at the direction of the chief of naval operations in coordination with the Navy's Bureau of Medicine and Surgery.

NAVY AWARDS AND COMMENDATIONS

Lieutenant Howard Arne Andersen

The Bronze Medal was recently awarded to Lieut. (jg) Howard Arne Andersen, formerly of Minneapolis. His citation reads "For heroic service as Medical Officer attached to the U. S. S. *Corry* when that vessel sank as a result of enemy action during invasion operations in the bay of the Seine, coast of France, June 6, 1944. Courageous and selfless in the performance of duty, Lieutenant, Junior Grade, Andersen remained to the last aboard the sinking vessel, working desperately to save the wounded even though the word had been given to abandon ship. Despite the grueling strain of continuous shelling from hostile shore batteries during the subsequent prolonged period in the water and although suffering from exposure, he carried on valiantly for another thirty hours in his steadfast and tireless ministration to the injured. His exceptionally gallant conduct and outstanding skill throughout this perilous engagement and during the disaster which followed reflect the highest credit on Lieutenant, Junior Grade, Andersen and on the United States Naval Service." Dr. Andersen graduated from the University of Minnesota Medical School, Minneapolis, in 1943 and received his commission after a Navy internship.

Lieutenant William Deffinger

Lieut. William Deffinger, formerly of Cincinnati, was recently cited by the Secretary of the Navy for heroic performance of duty. The citation reads "For heroic performance of duty while serving with the Second Marine Division in Tarawa on Nov. 23, 1943. When the battalion command post was heavily fired on by the enemy in a devastating night attack and one of the company officers was severely wounded, Lieutenant Deffinger, with utter disregard for his safety, crawled from his foxhole and made his way over terrain swept by enemy and friendly fire, determined to administer first aid to the stricken officer, but on reaching him found his comrade mortally wounded. Lieutenant Deffinger's professional integrity and valiant efforts to save the life of another at grave risk to his own were in keeping with the highest traditions of the United States Naval Reserve." Dr. Deffinger graduated from the University of Cincinnati College of Medicine in 1941 and entered the service July 14, 1942.

Lieutenant Commander Francis R. Meyers

Lieut. Comdr. Francis R. Meyers was recently commended by the Secretary of the Navy "for outstanding service as flight surgeon assigned to special duties in connection with the epochal mission of the Secretary of State to Moscow, Russia, in 1943. Throughout the hazardous flights and the period of the highly important tripartite conference, Lieutenant Commander Meyers rendered invaluable assistance and met his varied and essential responsibilities skilfully and with a thorough knowledge of the problems involved. By his superior professional ability and tireless effort he contributed materially to the successful achievements of the Secretary in this vital mission." Dr. Meyers graduated from Georgetown University School of Medicine, Washington, D. C., in 1930 and entered the service April 5, 1941.

Lieutenant Edward D. Curtin

The Navy and Marine Corps Medal was posthumously awarded to Lieut. (jg) Edward D. Curtin, San Bernardino, Calif., "for heroic conduct in the line of his profession as medical officer serving on board a motor torpedo boat while on patrol off the north coast of New Britain on the morning of March 27, 1944. Zealous and untiring in the performance of duty, Lieutenant, Junior Grade, Curtin voluntarily and repeatedly participated in hazardous patrols covering this area of intense combat activity in the hope of rendering service in case of casualties. Severely wounded when the motor torpedo boat was attacked and sunk, he displayed exceptional bravery throughout the action, disregarding his own serious condition and insisting that aid and care be administered to other injured men first. By his loyal spirit of self sacrifice and courageous devotion to duty, Lieutenant, Junior Grade, Curtin upheld the highest traditions of the United States Naval Service. He gallantly gave his life for his country." Dr. Curtin graduated from Stanford University School of Medicine, San Francisco, in 1941.

Commander Glenn G. English

Comdr. Glenn G. English, formerly of Los Angeles, was recently commended by Col. James P. Riseley, commanding the Sixth Marine Regiment, for his intrepidity and courage in establishing an aid station to care for and evacuate wounded Marines during the first bloody hours of the fight for Saipan. Dr. English landed and established a sorely needed aid station despite terrific mortar, artillery and small arms fire that was falling on the beach strewn with dead and wounded men. While others were taking over, Colonel Riseley said "Commander English went about his work with cool efficiency, disregarding the heavy enemy fire that was causing many casualties about him. The gallant action of Commander English in caring for the wounded without regard for his personal safety, despite this heavy fire, saved the lives of many wounded Marines. His courage and bravery were an inspiration to the officers and men under his command and to wounded Marines arriving at the beach." Dr. English graduated from Indiana University School of Medicine, Indianapolis, in 1922 and entered the service Nov. 7, 1940.

MISCELLANEOUS

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, November 4, page 645)

CONNECTICUT

St. Vincent's Hospital, Bridgeport. Capacity, 325; admissions, 9,278. Sister Louise, Superintendent (2 interns, July 1, 1945).

Danbury Hospital, Danbury. Capacity, 220; admissions, 3,907. Miss Anna M. Griffin, Administrator (4 interns, Jan. 1, 1945).

INDIANA

Lafayette Home Hospital, Lafayette. Capacity, 155; admissions, 3,569. Mr. T. E. Berg, General Manager (1 mixed resident, March 1 or April 1, 1945).

MAINE

St. Mary's General Hospital, Lewiston. Capacity, 175; admissions, 3,630. Sister Lachapelle, Superintendent (intern, Dec. 15, 1944).

NEW YORK

St. John's Long Island City Hospital, Long Island City. Capacity, 284; admissions, 5,418. Sister Thomas Frances, Superintendent (interns).

Mount Vernon Hospital, Mount Vernon. Capacity, 251; admissions, 4,706. Mr. A. B. Solon, Superintendent (interns).

OHIO

Fairview Park Hospital, Cleveland. Capacity, 201; admissions, 6,281. Mr. Philip Vollmer Jr., Superintendent (interns).

WEST VIRGINIA

Charleston General Hospital, Charleston. Capacity, 380; admissions, 10,200. Dr. Charles E. Cannaday, medical director (intern, July 1, 1945).

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Deshon General Hospital, Butler, Pa.: Compound Fractures as Are Seen in Battle Injuries, Dr. Arthur G. Davis, November 21.

ASF Regional Hospital, Camp Crowder, Missouri: Gastrointestinal Diseases, Dr. Carl R. Ferris, November 30.

AAF Rosecrans Field, St. Joseph, Mo.: Clinical Psychiatry, Dr. E. T. Gibson, December 14; Anesthesia, Dr. P. H. Lorhan, December 14.

ASF Regional Hospital, Fort Riley, Kansas: Arthritis, Dr. W. Merritt Ketcham, November 30.

AAF Great Bend, Kan.: Trauma of the Abdomen, Dr. E. P. Parsons, December 7; Pathology, Dr. M. L. Jones, December 7.

Mayo General Hospital, Galesburg, Ill.: Brain and Spinal Cord Injuries, Drs. Loren W. Avery and Ralph C. Hamill, November 29.

Camp Ellis, Camp Ellis, Ill.: Burns and Plastic Surgery, Col. William B. Parsons and Dr. Wayne B. Slaughter, November 29.

Chanute Field, Rantoul, Ill.: Chest Diseases and Diseases of the Larynx, Drs. William E. Adams and Robert G. Block, November 29.

MILITARY SURGEONS INSTRUCT SERVICE HOSPITAL AND PATIENTS BY TELEVISION

Television facilities of the National Broadcasting Company were recently used to describe to medical staffs and patients in seven service hospitals in and near New York how government agencies are functioning in the reconstruction of wounded servicemen. The telecast took place on the opening day of the three day conference of military surgeons at the Hotel Pennsylvania, November 2-4. Vice Admiral Ross T. McIntire, surgeon general of the Navy, Major Gen. Norman T. Kirk, surgeon general of the Army, Brig. Gen. Frank T. Hines, administrator of veterans affairs and Dr. Thomas Parran, surgeon general, U. S. Public Health Service, participated in the program. A film showing the steps taken in restoring the wounded to health and a normal life concluded the telecast.

The National Broadcasting Company planned this program in order that members of medical staffs whose duties prevented them from attending the conference and veterans confined to the hospitals would be able to see and hear the four officials who are directing the work of restoration. The television equipped institutions are the U. S. Convalescent Hospital, Harriman, N. Y.; the U. S. Naval Hospital, Brooklyn; Hospital of the Rockefeller Institute for Medical Research; Halloran General Hospital, Staten Island; Tilton General Hospital, Fort Dix, New Jersey; U. S. Naval Hospital, St. Albans, L. I., and Sea Gate Naval Hospital, Coney Island, N. Y.

ARMY-NAVY E AWARDS

The Kollmorgen Optical Corporation, Brooklyn, was recently granted the fourth renewal of the Army-Navy E Award. Admiral C. C. Bloch, chairman of the Navy board for production awards, stated that in consideration of the excellent record of this firm it has been decided that the company may retain the flag for a year before being considered for the next renewal.

The Army-Navy E award was recently presented to the Lakeside Laboratories, Milwaukee, manufacturers of pharmaceuticals. Brig. Gen. P. J. Carroll, commanding officer of Vaughan General Hospital, Hines, Ill., made the presentation.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Nov. 13, 1944.

Permanent Mobilization of Scientific Research

The contribution of American science and medicine to the present war has been so great that the Army and Navy have asked Congress for their permanent mobilization, and action on the request is expected to be taken at the reconvening session this week. Medical research has been of special value to the fighting services, and the work of American scientists, much of which has been kept entirely secret, is described by service leaders as a major factor in the success achieved by United States men at arms. The nation's scientists and laboratories were marshaled behind the armed forces to "assured maximum utilization of such personnel and resources in developing and applying the results of scientific research to defense purposes" when President Roosevelt in 1941 created by executive order the office of scientific research and development.

It is the desire of Army and Navy leaders that at least the nucleus of such an organization be retained after the war. The House Postwar Military Policy Committee, headed by Representative Clifton A. Woodrum (Democrat, Virginia) will probably have the matter high on its agenda during this session of Congress. It is possible that hearings will be held at the Office of Scientific Research and Development and that other scientific and medical leaders will testify. Representative James W. Wadsworth (Republican, New York) today directed attention to the remarkable work done by United States scientists in the war and said that "in a very real sense modern war is a battle between the scientists." This scientific phase of modern combat is highlighted today when V-1 and V-2 rocket bomb attacks on England are putting allied scientific resources to another test. In addition to medical development, scientific work has been required in the field of bomb and airplane rocket propulsion, radio communications, electronics, explosives and numerous other related subjects. Many of these developments are still on the secret list.

Dr. A. N. Richards is chairman of the Committee on Medical Research of the Office of Scientific Research and Development, which, in addition to Dr. Bush and Dr. Richards, has on its advisory council Dr. James Bryant Conant, president of Harvard University and chairman of the National Defense Research Committee, and Dr. J. C. Hunsaker, chairman of the National Advisory Committee for Aeronautics.

The permanent organization, as visualized by some members of Congress, would be largely independent of the Army and Navy. Scientists would have complete freedom in their activities, unconfined by the rigid operational restrictions of governmental bureaus. They would be expected to work in close cooperation with the armed forces.

The aim of the Office of Scientific Research and Development, as it has functioned during the war, has been to review and supplement the experimental and research activities of the War and Navy departments. Congressmen say that this office has been eminently successful, and they are agreed that never again should the research and development activities of the Army and Navy be starved for funds. This is in line with current belief that the peacetime army must be strong, that the Navy must continue at approximately its present strength and that the Air Force must be substantial in size. Modern war, it is pointed out, cannot be fought without radar, electrical gun aimers, bazookas and rocket guns, nor can fighting men be kept fit or restored to fighting condition, after they have been wounded, without the best in knowledge and equipment that modern science can supply.

Treatment of Addiction to Alcohol

Need of more medical rather than police attention by alcoholic addicts was stressed by Dr. Lawrence Kolb, former chief of the Mental Hygiene Division of the Bureau of Medical Services, U. S. Public Health Service, in his address sponsored here by Alcoholics Anonymous, national voluntary organization for the cure of drunkenness. Dr. Kolb, who was one of several doctors and social workers who spoke, said that the alcohol problem was fourth in the list of reasons why people are sent to hospitals for mental diseases; it is one of the commonest causes of violent crime, and if all secondary causes of death, such as cirrhosis of the liver, are included, it is rapidly becoming one of the major causes of death in this country. "Alcohol is really too much of a police matter in this country," he said. "Actually it should be more of a medical responsibility, with more helpful measures available, such as hospitalization, clinics, and more organizations doing such work as Alcoholics Anonymous." He advocated more research to find better methods of cure and prevention of addiction to alcohol, and more educational work to acquaint people with various aspects of the alcohol problem.

Capital Industry Gives Attention to Employee Health

A new venture in industrial health of the capital was the mass chest x-ray examination for symptoms of tuberculosis of employees of International Business Machines, conducted here with members of the Public Health Commission of the Washington Board of Trade as witnesses. Dr. Roy Lyman Sexton, chairman of the commission, commenting on the fact that this event was the first of its kind in Washington industry, said "The mass x-raying of these employees is a definite step forward in industrial medicine in the District of Columbia and marks the start of a new era in which industrial management is giving special consideration to the health of workers. It is to be hoped that other Washington concerns will realize the importance of this added health measure for the detection of tuberculosis and will arrange similar mass x-ray examinations."

Five Hospitals Given FWA Grants of $382,732

Presidential approval has been given to grants totaling $382,732 to five hospitals, including St. Elizabeths in Washington, toward the cost of constructing and equipping nurses' homes and training facilities, Major Gen. Philip B. Fleming, federal works administrator, announced. Expansion of the hospitals, all participating in the U. S. Cadet Nurse Corps training program, will provide for an additional 348 student nurses. They are St. Vincent's Sanitarium, St. Louis County, Mo.; Montana State Hospital, Warm Springs; the State Hospital at Raleigh, N. C., and Fort Steilacoom Nurses Home, state of Washington.

Society Proceedings

COMING MEETINGS

American Society of Anesthetists, New York, Dec. 14. Dr. McKinnie L. Phelps, 745 Fifth Ave., New York 22, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 15-17. Dr. E. Martinez-Rivera, P. O. Box 3866, Santurce, Secretary.

Southern Surgical Association, Hot Springs, Va., Dec. 5-7. Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Western Surgical Association, Chicago, Dec. 1-2. Dr. Arthur R. Metz, 250 East Superior St., Chicago, Secretary.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

District Meetings.—The Third Councilor Medical Society of Arkansas was addressed at its meeting in Brinkley, October 27, by:

Dr. Pat Murphey, Little Rock, The Spastic Child.
Dr. Joseph F. Shuffield, Little Rock, Penicillin in Treatment of Osteomyelitis.
Dr. James O. Rush, Forrest City, Hemorrhage in the Newborn.
Dr. Frederick W. Hames, Pine Bluff, X-Radiation in Nonmalignant Conditions.
Dr. Austin F. Barr, Cherry Valley, A Plea for Conservatism in the Management of Acute Cardiac Crises.

The First Councilor District Medical Society of Northeast Arkansas held its eighty-fourth semiannual meeting in Jonesboro, October 19. Among the speakers were Drs. Joseph F. Shuffield, Little Rock, on "Penicillin in Treatment of Osteomyelitis"; Neuton S. Stern, Memphis, Tenn., "Cardiac Neurosis," and John L. Jelks, Memphis, "Cancer of the Large Bowel."

CONNECTICUT

Grant for Work in Cancer.—A grant of $1,500 for use in the field of cancer prevention in Connecticut has been voted by the trustees of the Anna Fuller Fund for a year beginning November 1. The grant, which is to be expended under the direction of Dr. Hugh M. Wilson, New Haven, chairman of the committee on tumor study of the Connecticut State Medical Society, marks the first instance of the allotment of funds by such a foundation to a committee of the state society. The trustees of the fund, a trust created under the will of the late Egbert C. Fuller, New Haven and Branford, for the advancement of cancer research, are assisted in its administration by a board of scientific advisers the members of which are Dr. George M. Smith, New Haven, chairman; Brig. Gen. Stanhope Bayne-Jones, M. C.; Dr. Milton C. Winternitz, New Haven, and Dr. Ernest L. Kennaway, London, England.

Horace Wells Centenary.—The *Connecticut State Medical Journal* for November was designated the Horace Wells Centenary Number in honor of the Hartford dentist who on Dec. 11, 1884 submitted to the first operation performed under nitrous oxide. On Sept. 21, 1944 the United States Senate adopted a resolution commemorating this event. The Connecticut State Medical Society and the American Dental Association will cooperate at a special meeting in Hartford, December 11, to celebrate the centenary of the discovery of the anesthetic properties of nitrous oxide by Dr. Wells, and a plaque will be unveiled marking the site of the former home of the dentist. Among the speakers at the special meeting will be:

Howard R. Raper, D.D.S., Albuquerque, N. M., Glimpses of the Man Horace Wells.
Dr. Theodor Blum, New York, History and Use of Local Anesthesia in Surgery.
Dr. Emery A. Rovenstine, New York, Nitrous Oxide, High-Lights and Side-Lights.
Dr. Charles J. Wells, Syracuse, N. Y., Horace Wells, the Discoverer of Anesthesia.
Dr. Arno B. Luckhardt, Chicago.
Gov. Raymond E. Baldwin, Hartford.
Senator Francis Maloney, Meriden.
Dr. H. Gildersleeve Jarvis, Hartford, president, Connecticut State Medical Society.
Walter H. Scherer, D.D.S., Houston, Texas, president-elect, American Dental Association.
Arthur H. Merritt, D.D.S., New York, past president of the American Dental Association.

The principal afternoon address will be delivered by Thomas Parran, surgeon general of the U. S. Public Health Service.

GEORGIA

Executive Secretary Retires.—Mr. H. L. Rowe, Social Circle, retired on October 1 as executive secretary of the Medical Association of Georgia, a position he held for nineteen years. He has been succeeded by Miss Viola Berry, Atlanta, who has been associated with the Druid Hills Baptist Church for eighteen years.

Steiner Clinic Ruled Part of Grady Hospital.—The Atlanta City Council has ruled that the Albert Steiner Clinic for Cancer and Allied Diseases is a part of Grady Hospital and that the provisions of the city charter, as validated by the state legislature, prevent its release from the authority of the hospital board of trustees. The clinic was established by a trust fund created by the late Albert Steiner, and the Steiner estate and the city together have operated it since 1923. The ruling was in answer to an attempt to create a separate board of trustees to operate the clinic, it was reported.

Proposed Department of Psychiatry.—Plans are under way at Emory University, Atlanta, to establish a department of psychiatry at Grady Hospital to function in connection with the school of medicine. In a statement to the press Dr. Russell H. Oppenheimer, dean of the medical school, is reported to have said that some of the funds to finance the new department are now available but that work was being held up pending completion of the matter of financing, improvement of facilities at the hospital for clinics and beds for certain types of patients, and a shortage of physicians.

Pediatric Meeting.—The twelfth annual scientific meeting of the Georgia Pediatric Society will be held December 14 in Atlanta. The afternoon session will be at the Biltmore Hotel and the evening meeting at the Academy of Medicine. Among the speakers will be:

Dr. Robert L. Bennett Jr., Warm Springs, Care of Emergencies Arising During the Acute Stage of Infantile Paralysis.
Dr. Herbert C. Miller Jr., New Haven, Conn., Effect of Maternal Diabetes Mellitus on Viability of the Fetus and Newborn Infant.
Dr. Bret Ratner, New York, Sulfonamide Allergy in Children.

The same speakers will be included among those who address the evening session.

Dr. Sydenstricker Joins UNRRA.—Dr. Virgil P. W. Sydenstricker, professor of medicine, University of Georgia School of Medicine, Augusta, and physician in chief at the University Hospital, has accepted a commission with the United Nations Relief and Rehabilitation Administration as chief counsel in nutrition of western Europe. His rank will be that of colonel. The Augusta *Herald*, October 30, reports that Dr. Sydenstricker has been granted a six months leave from the medical school and that he will have charge of organizing the health service of all the nations west of the Balkans which have been freed from the dominance of Germany. Dr. Sydenstricker spent 1942 in England as nutritional adviser under the auspices of the Rockefeller Foundation.

ILLINOIS

Personal.—Dr. Joseph T. Maher, formerly medical director of the Madison County Sanatorium, Edwardsville, has been appointed medical superintendent of the Vermilion County Tuberculosis Dispensary and Hospital, Danville, succeeding Dr. Lemuel R. Broome, who resigned to go to Beckley, W. Va.

Chicago

Electrocardiographic Interpretation.—A course in electrocardiographic interpretation for graduate physicians will be given at Michael Reese Hospital by Dr. Louis N. Katz, director of cardiovascular research. The class will meet each week, starting Wednesday, February 14, for twelve weeks, from 7 to 9 p. m. Further information and a copy of the program may be obtained on application to the cardiovascular department, Michael Reese Hospital, Twenty-Ninth Street and Ellis Avenue, Chicago 16.

Research Fellowships.—Applications for research fellowships in medicine, dentistry and pharmacy in the University of Illinois are now being considered for the year beginning Sept. 1, 1945. Appointments to these fellowships will be announced on or before April 1. Candidates for these fellowships must have completed a training of not less than eight years beyond high school graduation. The fellowship carries a stipend of $1,200 per calendar year, with one month's vacation. Application blanks and further information may be secured from the secretary of the committee on graduate work in medicine, dentistry and pharmacy, William H. Welker, Ph.D., 1853 West Polk Street, Chicago 12.

Scholarship Awards at Northwestern.—Announcement is made of the creation of the Phi Rho Sigma scholarship awards at Northwestern University Medical School to stimulate scholarship in the school among organized groups as well as among the individual students. One award will be in the form of a suitable trophy, which shall remain the property of the medical school and which shall be placed and maintained in the Archibald Church Library. The trophy will be awarded annually to the national fraternity in the medical school having thirty or more active members enrolled as regular students which has maintained the highest scholastic average during the preceding year. There will also be two individual cash awards, one for the student who has maintained the highest scholastic average during three years in the medical school

and the other to the student in the winning fraternity who, in the opinion of the fraternity, has contributed most to their success in winning the trophy. The awards shall be made annually as a part of the founder's day convocation. These awards, which were announced by Dr. Howard B. Carroll, president of the medical division of the Northwestern University Alumni Association, were made possible by an alumnus of Phi Rho Sigma who wishes to remain anonymous.

INDIANA

Personal.—Dr. Theodore Makovsky, Valparaiso, who graduated in the Indiana University School of Medicine, Indianapolis, in 1944, has been given a fellowship in pathology for research in cancer by the Indiana Field Army; the fellowship provides $1,400 a year for three years.

Orthoptic Clinic at Riley Hospital.—An orthoptic clinic has been created at the James Whitcomb Riley Hospital for Children, Indianapolis, to provide special training for children having difficulty in eye focusing and to supplement surgery for correction of crossed eyes. The new unit will add to the Indiana University Medical Center's facilities, of which the Riley Hospital is a part.

District Meeting.—The seventy-second semiannual meeting of the Eleventh Indiana Councilor District Medical Association was held in Kokomo, October 25. Among the speakers were Drs. Merlin H. Draper, Fort Wayne, on "Modern Concepts of Tuberculosis"; Capt. Archie E. Brown, M. C., "Tropical Medicine as It May Affect Future Civilian Life," and Gerald F. Kempf, Indianapolis, "Uses and Limitations of Penicillin."

MICHIGAN

Edgar Norris Given New Position.—Dr. Edgar H. Norris, since 1939 dean of Wayne University College of Medicine, Detroit, has been appointed director of medical sciences, a newly created position in the development of the Medical Science Center. The action was taken on the recommendation of Warren E. Bow, LL.D., Detroit, president of the board of education. The new dean of the medical school has not been appointed, according to Detroit *Medical News*. At a meeting of the board, October 10, it was decided that the schools involved in the Medical Science Center would be managed by the present administration of the university. The head of each of the respective schools will be a member of the council of deans of the university and will report to the executive vice president, who in turn will report to the president. The university administration will be assisted by Dr. Norris in his capacity as director of medical sciences, who will be liaison official in the development of the center and who will also be a member of the council of deans. In addition he will be a liaison official with the board of directors of the Medical Science Center and the trustees of the Wayne University County Hospital. Units having facilities in the Medical Science Center will include the college of medicine, college of pharmacy, school of industrial health, the nursing program, the mortuary science program and any other programs, schools and colleges that may be developed.

MISSOURI

State Trudeau Chapter Created.—Dr. Elmer E. Glenn, Springfield, was chosen president-elect of the Missouri chapter of the American Trudeau Society, which was formed at a meeting October 4 in Kansas City. Other officers include Dr. George D. Kettelkamp, Koch, president, and Dr. Mathew J. Noon, Kansas City, secretary-treasurer.

Memorial to Physician.—On October 31 the Northeast Community Center dedicated a clinic room as a memorial to Dr. Minford A. Hanna. He died Aug. 24, 1943. The memorial is a tribute to the work done by Dr. Hanna during his lifetime in caring for the patients of the Italian Institute and Central Chapel, of which the Northeast Community Center is a branch.

NEW YORK

Simon Henry Gage Dies.—Simon Henry Gage, research scientist in biology and for many years a teacher of physiology, anatomy, histology and embryology, Cornell University, died at Interlaken, aged 93.

Industrial Health Seminar.—The Medical Society of the County of Queens, Forest Hills, opened an industrial health seminar, November 2, with a lecture by Dr. Martin I. Hall, Bristol, Conn., on "Organization and Administration of an Industrial Medical Department." Dr. Kingsley Roberts, New York, spoke November 6 on "Welfare Insurance with Regard to Industrial Health" and Mr. Leland W. Hill, assistant director, department of labor, on "Industrial Health from the Viewpoint of the Industrial Commission." J. J. Bloomfield, senior sanitary engineer, U. S. Public Health Service, gave an address, November 9, on "Environmental Control of Occupational Diseases." Others in the series are:

Dr. Nathan Millman, Brooklyn, Method of Plant Survey, November 13.
Louis Schwartz, medical director, U. S. Public Health Service, Occupational Dermatoses, November 16.
Dr. Paul Reznikoff, Toxic Effects of Heavy Metals and Dr. Adelaide H. Ross Smith, New York, Toxic Effects of Gases, Fumes and Vapors, November 20.
Mr. Graham Cole, safety engineer, Metropolitan Life Insurance Company, Safety in Industrial Medicine, November 23.
Industrial health from the viewpoint of the following specialties: Dr. Lydia G. Giberson, New York, psychiatry, Dr. Alfred Angrist, Jamaica, pathology, and Dr. George Freiman, Brooklyn, ophthalmology, November 27.
Mr. A. A. Hendrix, personnel director of the Eastern Aircraft Division, General Motors Corporation, Linden, N. J. Personnel, Miss F. Ruth Kahl, public health nursing consultant, U. S. Public Health Service, Industrial Health from the Nurse's Viewpoint, and Lyman D. Heacock, senior dental surgeon, U. S. Public Health Service, Industrial Health from the Dental Viewpoint, December 4.
Dr. Dean A. Clark, Washington, D. C., Physical Restoration in the Federal-State Vocational Rehabilitation Program for Disabled Civilians, William M. Gafafer, statistician, U. S. Public Health Service, Absenteeism, and Dr. Robert S. Goodhart, Forest Hills, Nutrition, December 7.
Col. Anthony J. Lanza, M. C., Occupational Diseases—Pneumoconioses, December 11.

New York City

New Professor of Otorhinolaryngology.—Dr. Joseph D. Kelly of the Manhattan Eye, Ear and Throat Hospital has been appointed professor and chairman of the department of otorhinolaryngology at the New York University College of Medicine. Dr. Kelly graduated at Georgetown University School of Medicine, Washington, D. C., in 1912.

Community Service Society of New York Issues Pamphlet on Child Care.—A new pamphlet on "Child Care and Development" has been issued by the Community Service Society of New York. It sets up for each age, beginning at birth and carrying on to 5 years, certain developmental signs for the child, such as height, weight, diet, sleep, physical development and recommended practices. The pamphlet is one of the most useful documents that a physician can make available to a nurse or to members of the family. As a public service the pamphlet is sold at 10 cents plus postage on orders for one to one hundred, and 8 cents plus postage on orders over one hundred.

Abraham Brill Honored.—On October 12 a dinner was given at the Waldorf-Astoria in honor of Dr. Abraham A. Brill, lecturer in psychoanalysis and psychosexuality, Columbia University, to celebrate his seventieth birthday. Dr. Louis Casamajor was toastmaster, and speakers included Dr. Clarence P. Oberndorf, Dr. Leonard Blumgart, Dr. Leo H. Bartemeier, Harry Woodburn Chase, LL.D., and Dr. Brill. It was announced at the dinner that a fund in honor of Dr. Brill had been raised amounting to about $6,000 with which he intends to endow a library. It was also announced that a library in the new building of the New York Psychoanalytic Institute will be named in honor of Dr. Brill.

Memorial Meeting in Honor of Madame Curie.—A memorial meeting was held at Columbia University by the Polish Institute of Arts and Sciences in America, October 20, to mark the tenth anniversary of the death of Marie Sklodowska Curie. Six departments of the university, including chemistry, chemical engineering, East European languages, medicine, physics and radiology, participated. Among the speakers were Wojciech A. Swietoslawski, E.E., Mellon Institute, Pittsburgh, and vice president of the International Union of Chemistry, who spoke on "The Legend of Madame Curie," and Kasimir Fajans, Ph.D., University of Michigan, Ann Arbor, a member of the Polish Academy, who gave an illustrated lecture on "The Discovery of Radium and the Modern Development of Chemistry and Physics."

OHIO

Dr. Kretschmer to Give Lower Lecture.—Dr. Herman L. Kretschmer, Chicago, President of the American Medical Association, will deliver the annual Lower Lecture before the Academy of Medicine of Cleveland, November 24. His subject will be "Present Status of the Prostatic Problem."

Appointments to Cleveland Clinic.—Drs. Arthur C. Corcoran and Robert D. Taylor, formerly members of the staff of the Lilly Laboratory for Clinical Research, Indianapolis, have been appointed to the staff of the research division of the Cleveland Clinic. Dr. Corcoran's interest is in renal function and that of Dr. Taylor in the clinical aspects of hypertension.

First Prentiss Award in Health Education.—On November 14 the Elisabeth S. Prentiss National Award in Health Education for 1944 was presented to Mary Swain Routzahn and her husband, the late Evart G. Routzahn, for their prominent work in health education. The selection was made by a nominating committee for the Cleveland Health Museum. Evart G. Routzahn was director of the first traveling exhibit campaign on tuberculosis which helped to establish the National Tuberculosis Association. From 1912 to his death in 1939, he was associated with the department of surveys and exhibits of the Russell Sage Foundation, New York. Mrs. Routzahn organized the Children's Council in Washington, D. C., and conducted a study of the board of children's guardians, children in the street trades and children under 14 receiving permits to work from the Juvenile Court. She also joined the Russell Sage Foundation in 1912 serving as director of department social work interpretation since 1935. According to the Cleveland Health Museum, one of the major achievements for which the Routzahns were largely responsible is the organization now bearing the name of the National Publicity Council for Health and Welfare Services. They also founded the health education section of the American Public Health Association. The Elisabeth S. Prentiss Award was established this year by the Cleveland Health Museum in honor of Mrs. Prentiss, who in 1940 gave her childhood home to house the museum. Mrs. Prentiss died January 4 (THE JOURNAL, January 15, page 181).

OKLAHOMA

Student Receives First Perry Scholarship.—Clyde Goodnight, senior student at the University of Tulsa, has received the first award of the Dr. Marcus L. Perry Scholarship, established this year by the physician's son, Dr. John C. Perry, Tulsa (THE JOURNAL, August 5, p. 982). The $250 scholarship is awarded to a premedical student, the selection to be determined on the basis of past scholastic record, medical aptitude, character and financial need.

Faculty Changes.—Louis Alvin Turley, Ph.D., who has been professor of pathology at the University of Oklahoma School of Medicine, Oklahoma City, since 1908, has been made professor emeritus, effective September 1. He will continue his association with the school doing research. Dr. Howard C. Hopps, formerly assistant professor of pathology at the University of Chicago School of Medicine, has been appointed professor and chairman of the department of pathology at Oklahoma.

Combined Health Department Proposed.—The Tulsa County Medical Society recently approved in principle a series of recommendations by the Tulsa Chamber of Commerce to unite into a single unit the public health agencies in the Tulsa area. The new unit would be known as the Metropolitan Tulsa Health Department and would represent a consolidation of the city and county health departments, the Tulsa Public Schools health department and the Tulsa Cooperative Clinic. If adopted, the working plan will provide that the control of the proposed department will be directed by a governing board of nine members including the mayor, the chairman of the board of county commissioners, the president of the board of education and six appointive members, three of whom are to be members of the Tulsa County Medical Society, one a member of the county dental association, one a member of the governing board of the Tulsa Public Health Association and one to be nominated by the president of the chamber of commerce. Each member of the board must be at least 30 years of age and a resident of the county at least two years prior to appointment. Administration will be directed by a qualified doctor of medicine with at least one year of study in a recognized school of public health who shall be appointed by the board.

RHODE ISLAND

John E. Donley Named Director of State Curative Center.—With the recent appointment of Dr. John E. Donley, Providence, as director of the State Curative Center, the project which was set up in a bill enacted by the last general assembly is now being developed. The bill provided for the establishment in the treasury department of the state of a special fund to be known as the Curative Center Fund which would be used for a suitable structure to house the center, to finance the necessary equipment for the rendering of physical therapy, psychotherapy and occupational therapy and to provide for the payment of salaries of personnel required to operate the center. The bill stipulated that the selection of the medical director was to be done with the approval of the Rhode Island Medical Society, his term to run for five years. An advisory board has been set up consisting of three physicians appointed by the director of labor with the approval of the council of the society, the director of labor and the chief of the division of workmen's compensation. The provisions of the bill make available to injured workers coming within its purview all possible modern curative treatment and methods under the supervision of medical experts and after consultation with the employees' own physicians. In a report to the house of delegates of the Rhode Island Medical Society at its meeting, September 28, Dr. Donley stated that the advisory board was now working on plans of operation.

TENNESSEE

Dr. Gass Enters Military Service.—Dr. Roydon S. Gass, Franklin, for twelve years director of tuberculosis control for the Tennessee Department of Public Health, has been commissioned senior surgeon in the U. S. Public Health Service Reserve with the rank of lieutenant colonel. Newspapers report that he has been assigned for overseas duty with the United Nations Relief and Rehabilitation Administration as consultant on tuberculosis. Dr. Elliott F. Harrison, Franklin, assistant director of tuberculosis control, will serve as acting director during Dr. Gass's leave.

VIRGINIA

Frederick Shaw Devotes Full Time to Research.—Dr. Frederick W. Shaw, professor of bacteriology and parasitology at the Medical College of Virginia, Richmond, was recently made research professor of bacteriology in order that he may devote his entire time to research. J. Douglas Reid, Sc.D., associate professor of bacteriology and parasitology, became acting head of the department effective October 1, when he relieved Dr. Shaw, who had been serving as head of the department up until that time.

Proposed Medical Service Plan.—Dr. John M. Emmett, Clifton Forge, was named president of the Associated Doctors of Virginia at a meeting October 4 in Richmond. Other officers include Drs. Ray A. Moore, Farmville, vice president, and Morgan B. Raiford, Franklin, secretary-treasurer. The group will be an association of physicians participating in a voluntary plan to provide medical service. The Richmond Hospital Service Association will act as agent for the plan, which proposes to offer surgical, x-ray and obstetric coverage for the public.

WEST VIRGINIA

Tumor Clinic.—A tumor clinic has been organized at Morgantown under the sponsorship of the Monongalia County Medical Society. Members of the society will serve at the clinic, which will be held at least once a month, and patients will be advised to return to their own doctors with recommendations for treatment if necessary. The usual treatment recommended will be surgery, radium and high voltage x-ray therapy. The first clinic was held at Morgantown, October 27.

Health Center Dedicated.—The first building in the state to be constructed for the sole purpose of housing the various health units of the community was officially dedicated October 16 as the Monongalia County Health Center. Located on the grounds of the Monongalia General Hospital, just outside the city limits of Morgantown, the center is equipped to provide for the needs of the health program in the county. It was financed by members of the county court, public health officers, physicians and private citizens. It will be under the supervision of Dr. Ward L. Oliver.

WISCONSIN

Personal.—Dr. Florence E. MacInnis recently resigned as medical director of the tuberculosis division of the Milwaukee Health Department to enter private practice in Kansas City, Mo.——Dr. Francis P. Dolan recently joined the staff of the Wisconsin Anti-Tuberculosis Association.

Dr. Stovall Named Regional Director of Cancer Society.—Dr. William D. Stovall, Madison, Wis., has been appointed regional director of the American Cancer Society. Under a new program set up by the American Cancer Society, regional directors will collaborate with Field Army regional commanders.

Dr. Gavin Receives Council Award.—The Council Award of the State Medical Society of Wisconsin was presented to Dr. Stephen E. Gavin, Fond du Lac, chairman of the council, during the recent annual meeting of the society. This is the highest award the society bestows on its members and is granted only on occasion through unanimous vote of the council. Dr. Raymond G. Arveson, Frederic, councilor from the tenth

district, in making the presentation, stated that Dr. Gavin had been a member of the society for forty-four years, serving as past president of both his county and his state medical society.

Cancer Program.—"Current Research Problems in Cancer" was the theme of a symposium sponsored by the University of Wisconsin Medical Society, November 7. The speakers were Dr. Harold P. Rusch, Madison, on "Development of Cancer as a Three Stage Process"; Van R. Potter, Ph.D., Madison, "Biochemical Changes Involved in Cancer Formation," and James A. Miller, Ph.D., Madison, "Fate of a Carcinogenic Azo Dye in the Body." The society will be addressed on December 5 by Dr. Charles J. Thill of the university on the "Present Status of Penicillin Therapy."

Dearholt Day.—A joint meeting of the Wisconsin Anti-Tuberculosis Association, the Wisconsin Trudeau Society and the Milwaukee Academy of Medicine will constitute the observance of Dearholt Day at the University Club of Milwaukee, November 21. Dr. Mary Broadbent of the Wisconsin Anti-Tuberculosis Association will open the meeting and present Drs. Edgar M. Medlar, New York, who will discuss "Problem of Demonstrating and Interpreting the Significance of Acid-Fast Bacilli" and H. McLeod Riggins, New York, "Clinical Value of Studies of Lung Function in Chronic Pulmonary Disease."

GENERAL

Appointment to National Research Council.—Dr. Henry E. Meleney, professor of preventive medicine, New York University College of Medicine, has been appointed representative from the American Society of Tropical Medicine to the division of medical sciences of the National Research Council (THE JOURNAL, September 16, p. 183). According to *Tropical Medicine News*, Dr. Meleney's appointment was as of July 1, 1944 and he will serve for three years.

Special Society Election.—Dr. Peter D. Ward, St. Paul, was chosen president-elect of the American Hospital Association at its annual meeting in Cleveland in October, and Dr. Donald C. Smelzer, Philadelphia, was inducted into the presidency. Vice presidents are Harold A. Grimm, Millard Fillmore Hospital, Buffalo, Rev. George Lewis Smith, Diocese of Charleston, Aiken, S. C., and A. J. MacMaster, R.N., Moncton Hospital, Moncton, New Brunswick, Canada. Other officers include Dr. Harley A. Haynes, Ann Arbor, Mich., treasurer, and Mr. George Bugbee, Chicago, executive secretary.

Maternal and Child Health Directors Organized.—Dr. Edwin R. Watson of the Georgia Department of Public Health, Atlanta, was elected president of the Association of Maternal and Child Health Directors at its recent organization meeting in New York. The association includes the directors of maternal and child health services in the forty-eight states and possessions as well as other medical personnel who are associate members. Dr. Jesse M. Bierman, San Francisco, was elected vice president and Dr. Dean W. Roberts, Baltimore, secretary-treasurer. According to *Georgia's Health* the new association has the approval of the Association of State and Territorial Health Officers and is to work in close cooperation with it.

Conferences on Psychosomatic Problems.—The American Society for Research in Psychosomatic Problems through its research committees has scheduled the following conferences in New York:

Drs. Eugene A. Stead Jr., Atlanta, Ga., Herbert Chasis and Jacob A. Arlow, New York, Psychosomatic Aspects of Heart Failure, November 30, under the auspices of the committee on cardiovascular disease.

Major Harold Abramson, M. C., Dr. Edward Weiss, Philadelphia, and Dr. Milton B. Cohen, Cleveland, Allergy, December 13, under auspices of committee on cutaneous and allied diseases.

Drs. John Romano and George L. Engel, Cincinnati, Delirium, December 14, under the auspices of the committee on physiologic mechanisms and animal experimentation.

The address of the American Society for Research in Psychosomatic Problems is 714 Madison Avenue, New York 21.

Meeting of Menninger Foundation.—At the third annual meeting of the board of trustees of the Menninger Foundation, October 24, in Topeka, Dr. Karl A. Menninger was elected president. Other officers include Dr. William C. Menninger, Mr. John R. Stone, Topeka, and Mr. P. E. Burton, St. Louis, vice presidents; Dr. Kurt T. Toeplitz, secretary, and Dr. Robert P. Knight, Topeka, treasurer. It was voted to permit any person interested in the objectives of the foundation which are the development and furtherance of psychiatric research, education and treatment, to apply for membership in the organization. It was also announced at the meeting that the officers of the foundation had been visiting certain medical schools to inform students concerning the need for specialization in psychiatry. A report submitted at the meeting indicated that less than 2 per cent of medical students are interested in becoming psychiatrists.

Cancer Award Goes to Roscoe Spencer.—The Clement Cleveland Award presented by the American Cancer Society was given to Dr. Roscoe R. Spencer, chief of the National Cancer Institute, Bethesda, Md., at the eighteenth annual dinner of the New York City Cancer Committee October 31. Dr. Spencer received the 1944 medal because of his noteworthy services in the movement for cancer control. The award was established in 1937. Dr. Spencer has been chief of the National Cancer Institute since 1943, having served as assistant chief since 1937. In 1930 he was awarded the gold medal of the American Medical Association for his discovery of a preventive vaccine against Rocky Mountain spotted fever. The citation accompanying the recent award read:

> The committee has by unanimous vote elected you as the recipient of the medal for 1944, because of the outstanding services you have rendered to the movement for cancer control. By virtue of the very office that you hold as chief of the National Cancer Institute your influence is far reaching, and your contribution during the past year in articles written for the layman has without doubt greatly aided in the educational work of cancer control, for which this award is given. Your most recent effort to aid the work of the newly formed organization, the National Foundation for the Care of Advanced Cancer Patients, all seem to make you worthy in some measure of our recognition.

Appeal to Retain Diathermy Waves.—Continued availability in the radio spectrum within which short wave diathermy machines may be operated by physicians and surgeons was urged October 31 at a Federal Communications Commission hearing by representatives of the medical profession and manufacturers of equipment, according to the New York *Times*. An estimated 50,000 short wave diathermy machines are now operated by civilian hospitals in the vicinity of those parts of the spectrum referred to in a general way as the 40, 27 and 13 megacycle bands. Allocation of the small portion of the spectrum desired for this service, of benefit to hundreds of thousands of ill and injured persons, was presented as "a not unreasonable request" by the applicants. Dr. Warren P. Morrill, Chicago, for the American Hospital Association, A. W. Mathes of the H. G. Fisher Company and Lee de Forest, Sc.D., of the de Forest Laboratories, Los Angeles, on behalf of the physical therapy group of the American Surgical Trade Association, supported the joint request. They opposed changes or limitations, which they said would involve the scrapping of much needed equipment and replacement at double the cost by machines less desirable for general medical purposes.

FOREIGN

Personal.—*Science* reports that Dr. Gaston Ramon, director of the Pasteur Institute of Paris, and his family are reported to be safe and in good health. Dr. Ramon is the discoverer of the diphtheria toxoid and tetanus toxoid immunization and the flocculation test of diphtheria toxin.——Dr. Frank Goldby, Elder professor of anatomy in the University of Adelaide, South Australia, has been appointed professor of anatomy at St. Mary's Hospital Medical School, London.

Deaths in Other Countries

Dr. Leopoldo Ramirez Mairena, Managua, Nicaragua, Central America; Jefferson Medical College of Philadelphia, 1893; served as a member of the Chamber of Deputies and minister of public works; editor of *La Verdad;* represented Nicaragua on many missions abroad; died July 17, aged 78. ——**Dr. Thomas Hancock Arnold Chaplin,** formerly president of the Section for History of Medicine of the Royal Society of Medicine and author of "A St. Helena Who's Who" and two works on the illness of Napoleon, died at Bedford, London, October 18, aged 80.——**Dr. Jean Louis Faure,** formerly secretary general of the French Society of Surgery, died in St. Emilion, near Bordeaux, on the eve of his eighty-second birthday.

CORRECTIONS

Infectious Hepatitis.—In the legend for chart 5 in the article by Havens in THE JOURNAL, September 2, page 21, the statement concerning bromsulphalein dye "after intravenous injection of 15.15 mg. per 55 pounds . . ." should read "after intravenous injection of 50 mg. per 55 pounds . . ."

Typhus Fever.—In the article by Yeomans et al. (THE JOURNAL, October 7), page 351, right hand column, line 4, chart 3 should read chart 4, and in line 5 chart 2 should read chart 4. In the same article on page 352, left hand column, line 6, chart 4 should read chart 3.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 18, 1944.

A London Center for Postgraduate Students from Overseas

London House was founded in 1930 to provide a home where students from the overseas empire may reside while pursuing their studies. It has been used predominantly by men engaged in postgraduate research, chiefly medical or scientific, in the University of London, the teaching hospitals and other learned institutions of the capital. An appeal is being made now for $3,600,000 to complete the buildings and provide an endowment. It was announced that, although the major part of the foundation's activities is likely to be related to the needs of Great Britain, the trustees are conscious of their responsibilities to aid medical and scientific teaching and research in other parts of the British commonwealth. Provision will be made for men and women from this country to receive abroad the training and experience they need. Bringing men and women from other parts of the commonwealth to this country and giving them the best possible opportunities for study is also contemplated. After the war a common policy for medical and scientific research may be adopted by the various parts of the commonwealth. The chairman, Sir William Goodenough, said that the appeal had the support of the king, Mr. Churchill and the prime ministers of the dominions. The position of London as a center of education both for the commonwealth and beyond was a matter of vital importance, the chairman stated. It had long been a center of education, but much remained to be done. In particular the background in which educational work is carried on, especially for those who come from overseas, has an importance which has not been realized, he added. A great advantage is that the home of the Nuffield Foundation (a vast system of benefactions to science and particularly to medicine due to the munificence of Lord Nuffield) will be in London House. There it is hoped that the foundation will draw together eminent leaders in medicine and science who will provide a stimulating background for young postgraduate students.

Horrors of the German Occupation of Greece

An appalling account of the population of Greece under the German occupation has been given by Mr. Theodore Caralli, a delegate of the International Red Cross, who has made several visits to Athens and other towns. Famine caused the death of 1,600,000 Greeks during the first sixteen months of the occupation. Every day, he said, 300 people were dying in the streets of Athens with nothing but a glass of water to relieve their agony. Every morning bodies were found in cemeteries of people who had gone there to die rather than be picked up by the municipal death carts. But for the unceasing efforts of the International Red Cross and of the Red Cross organizations of Sweden, France and Belgium, the situation would have been even worse, he reported. They could do, however, no more than touch the surface in ministering to the immediate needs of the children, who are piteously thin and go about barefoot and in rags.

Under an agreement made by the Greek government in exile a ship from Canada brings 16,000 tons of flour every month, but the situation was aggravated by the garrison of 200,000 Germans and 120,000 Italians who remained in Greece as workers cut off from their own supplies. There is no rail or road transport and no coal. The few supplies of food and wood reach Athens by pack mules. The Germans seized the whole output of olive oil, of which Greece is the principal producer in Europe, as they did the plentiful supplies of fruit from the Greek islands. The liberation of Athens was followed by the dropping of food and medical supplies by American planes almost immediately.

Wounded Flown to Britain from the Continent

To deal with the casualties during the advance from the Seine, the British second and the Canadian first armies were given sixty medical lorries each in addition to their ambulances. With these lorries the Army Medical Corps moved their field hospitals of 600 beds each by road all the way up to the Brussels-Antwerp area. The evacuation of the wounded to Britain by air went on all the time. The total number flown out since D day is 23,687. The casualties in the latter phases of the advance were lighter than had been expected.

PALESTINE

(From Our Regular Correspondent)

TEL AVIV, Oct. 8, 1944.

Epidemics in the Agricultural Districts

There has recently been an outbreak of typhoid in a communal settlement in the Beisan Valley. Of 293 adults and 9 older children who customarily dine in the communal dining room (the latter only in the evenings) 31 persons (10 per cent) contracted the disease between January 14 and February 16. There was one fatality. All indications pointed to the fact that the epidemic was due to the consumption on one particular occasion of tainted white cheese produced in the settlement. The sanitary conditions in this settlement (particularly in the kitchen) are most unsatisfactory.

There was a similar outbreak of typhoid in a communal settlement in the Jordan Valley. Between the 10th and the 16th of March 4 new cases of typhoid were reported. An unusual feature of this outbreak was that it affected 3 young children of the settlement, 8 months, 13 months and 3 years old respectively. An investigation of the causes of the epidemic revealed that on Dec. 11, 1943 the mother of a child aged 13 months had contracted typhoid. On the 17th of the same month she was admitted to the hospital. On the 24th a perforation of her intestine happened and an operation was performed. On Feb. 11, 1944 the patient was discharged from the hospital and sent home with an abscess which had not healed, and no instructions were given to her in regard to precautions against coming into contact with others, particularly children. Between the 11th and the 26th of February she visited the children's home regularly and tended to her own child and no doubt also handled other children. On February 26 she was sent away for convalescence.

A further investigation of the typhoid bacilli of the mother, carried out by Dr. L. Ulitzki of Hebrew University, showed that these were identical with those of 2 of the children who had contracted the disease. This provides proof that the infection had been introduced into the children's house by the mother and that the disease had been passed on by direct contact. The fact that the serologic examination of the woman's blood, which was made after she was suspected of being a carrier of typhoid bacilli, gave negative results cannot be accepted as evidence to the contrary, since over two months had elapsed between her handling of the child and the date of her examination.

Palestine Medical Congress

In September the fourth annual meeting of the Palestine Medical Congress took place in Jerusalem, thirty years after the Trachoma Conference held in 1914.

The first part of the congress was devoted to a study of problems connected with trachoma. Among the subjects discussed were Fifty Years of Ophthalmology in Palestine, Etiol-

ogy of Trachoma, Early Phases of Trachoma Research, Antitrachoma Services, Chemotherapy of Endemic Diseases of the Eye and Chemotherapy of Eye Diseases. A visiting lecturer, Rear Admiral Charles S. Stephenson (MC), U.S.N., addressed the congress. The subject of his lecture was Modern Trends in Public Health.

The second part of the Congress was devoted to problems of public health, the principal subjects being Medical Problems of Future Immigration, Mental Care of the New Immigrant, The Modern Hospital as a Center of Preventive Medicine, Organization of Preventive Medicine in Palestine, Antepartum Care of Pregnant Women in Health Welfare Centers, Preventive Medical Care of Infants and Children up to School Age in the Health Welfare Centers, Preventive Medical Care in Schools, Preventive Medical Activities of the Workers' Sick Fund, Activities of the Committee for the Study of the Natality Problem, The Demographic Situation of the Jewish People and the Jewish Population in Palestine, Causes of Declining Natality and The Physician's Task in Improving the Natality.

BUENOS AIRES

(From Our Regular Correspondent)

Sept. 29, 1944.

Inter-American Association of Postgraduate Physicians

The Inter-American Association of Postgraduate Physicians was recently established in Buenos Aires. The following doctors were appointed to the committee of directors: Napoleon Arnaud of Bolivia, president; Carlos Caldas Cortese of Brazil, vice president, and Lorenzo H. Martiarena and Ricardo Castro O'Connor, both of Argentina, secretaries. The aim of the association is to intensify the exchange of physicians who may take postgraduate courses in the various Pan American countries, to increase the number of scholarships and to carry on similar work. The office of the association is at Calle Vicente Lopez 1831, Buenos Aires.

Care of the Insane

Dr. Gonzalo Bosch, professor of psychiatry of the Faculty of Medicine of the University of Buenos Aires and head of the Hospital de las Mercedes of Buenos Aires, recently lectured before the Sociedad Científica Argentina. In 1782 the insane in Argentina were cared for by groups of friars in Cordoba, Dr. Bosch related. In 1813 and 1819 the violently insane were taken to secret places and kept there by means of irons and chains. In 1870 the insane were sent to an asylum in Buenos Aires. The census in 1869 listed 4,003 insane persons and 4,223 idiots. At the present time there are 58,500 persons in Argentina with mental diseases and several thousands of defective mental children. The speaker described several institutions, such as the League of Mental Hygiene of Buenos Aires, offices for consultation, dispensaries, preventoriums, psychiatric hospitals and colonies for patients with chronic mental diseases with possibilities for occupational therapy. He also advised the establishment of psychiatric departments in general hospitals. The National Department of Public Health is increasing the work carried on for the assistance of the insane, having in mind the economic, scientific and social aspects of the problem. The number of beds in the Argentine asylums for the insane is insufficient, he said. New asylums are under construction in various provinces, and some have already been opened. The large hospital for insane women was recently reopened. Patients with mental diseases who are violent and dangerous as well as those who need emergency medical care are given immediate admission to the hospitals. Idiots, imbeciles and patients with mental insufficiency will be received in special departments which are to be organized. Patients in hospitals will be discharged if the family or the local authorities who asked for the admission ask later on for the return of the patient. Otherwise the patients will be discharged after a cure of the mental disease is accomplished or when improvement enables the patient to live safely with his family. The amount of money allocated for expenses in asylums and assistance for the insane is $2,500,000.

Socialization of Medicine

Colonel Juan D. Peron, vice president of Argentina, introduced a bill through the National Secretariat of Work and Social Prevision for the establishment of a special committee to study the advisability of socializing medicine. Members of the committee will prepare professional statutes for regulating the work of physicians, ascertain the number of physicians necessary to give medical care to the public, establish regulations governing physicians in hospitals, set up the basis for promotion of physicians and decide such matters as the competence of physicians for various positions, salaries, vacations and retirement pensions. The statutes will include physicians who actually are working in municipal and provincial national hospitals and other health centers as well as in state hospitals and charitable hospitals. The work of mutual medical insurance, sanatoriums and private clinics will also be regulated. The field of medical social insurance will be covered by the secretariat, which will also protect physicians against the hazards of invalidism, old age, involuntary lack of work, disease and death. Another aspect to be studied is that concerning the proper distribution of physicians in the various territories of the country. Members of the committee will organize a medical association of all physicians to supervise professional ethics and prepare laws governing the practice of medicine and the sciences related to medicine.

International Patronage for the Leprous

An International Patronage for the Leprous was recently formed. It aims to organize international congresses and active crusades against leprosy. The Argentine Patronage for the Leprous has functioned for the last twelve years, during which it has spent $222,000 on persons with leprosy in addition to $250,000 for social aid given to normal children of leprous patients.

Control of Narcotics in Sanatoriums

A formulary similar to the dispensatory used by physicians was recently sent by the National Department of Public Health to the heads of sanatoriums, clinics and similar centers. It will be used only for the prescription of narcotics in the various clinical centers. The aim is to supervise the use of narcotics to prevent abuse.

Marriages

Josef Jay Goldstein, Macon, Ga., to Miss Helen Diane Schneider of Los Angeles in Wilmington, N. C., August 1.

James Mayhew Ingram Jr., Tampa, Fla., to Miss Frances Leighton Alderman of Bradenton, September 17.

Walter J. Gerstle, Lansdowne, Pa., to Gertrud M. Gunz, D.D.S., Sault Sainte Marie, Mich, November 4.

Alexander Pershing Jones, Fort Moultrie, S. C., to Miss Mary Louise Sims of Charleston, September 18.

Carl Lewis Gamba, Williamsport, Pa., to Miss Nina Lucille Eatman of Tuscaloosa, Ala., September 17.

Richard Crosman Fowler to Miss Mavis Helen Dunlop, both of Rochester, N. Y., September 23.

William Edmonds Weems, Shubuta, Miss., to Miss Evelyn Sillers Pearson of Rosedale, August 19.

Arthur Kazimier Cieslak to Dr. Margaret Atwater Olds, both of Brooklyn, September 16.

Alexander Webb Jr. to Miss Mary Louise Hall, both of Raleigh, N. C., September 6.

Lydia L. Verbarg, San Jose, Calif., to Mr. John W. Shaughnessy of San Mateo recently.

Deaths

Graeme **Monroe Hammond,** New York; University of the City of New York Medical Department, New York, 1880; emeritus professor of neurology and psychiatry at the New York Post-Graduate Medical School and Hospital, Columbia University; member of the Medical Society of the State of New York, American Psychiatric Association, New York Psychiatric Society and the New York Neurological Society; member, for many years secretary-treasurer and past president of the American Neurological Association; vice president in 1922 and president from 1930 to 1932 of the American Olympic Association; past president of the New York Athletic Club; a major, M. R. C., U. S. Army, during World War I, and later lieutenant colonel, medical reserve corps, not on active duty; received the LL.B. degree from the New York Law School in 1900; died in the New York Post-Graduate Medical School and Hospital, October 30, aged 86.

James Thorington, Philadelphia; Jefferson Medical College of Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; specialist certified by the American Board of Ophthalmology; an emeritus professor of diseases of the eye at the Philadelphia Polyclinic and College for Graduates in Medicine, later known as the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; consulting ophthalmologist emeritus at the Presbyterian Hospital; at one time surgeon for the Panama Railroad Company in Colon, Isthmus of Panama; author of "Retinoscopy," "Refraction and How to Refract," the "Ophthalmoscope and How to Use It," "Prisms: Their Use and Equivalents," "Refraction of the Human Eye and Methods of Estimating the Refraction" and "Methods of Refraction," which was translated into Chinese; died October 27, aged 86, of generalized arteriosclerosis and bronchopneumonia.

Edward **Randall,** Galveston, Texas; University of Pennsylvania Department of Medicine, Philadelphia, 1883; professor of therapeutics emeritus at the University of Texas Medical Branch, where he had been for more than thirty-seven years professor of therapeutics and materia medica; member of the State Medical Association of Texas; served as president of the Galveston County Medical Society; formerly chairman of the board of regents of the University of Texas, of the board of the John Sealy Hospital and at the time of his death of the board of directors of the Sealy and Smith Foundation; president of the Rosenberg Library and of the Texas Philosophical Society; recently the amphitheater in the outpatient clinic building of the University of Texas Medical Branch had been named Randall Hall in his honor; died August 12, aged 83.

John **Harper Blaisdell** ✠ Boston; Harvard Medical School, Boston, 1911; member of the American Dermatological Society and the American Academy of Dermatology and Syphilology; member and past president of the New England Dermatological Society; served as president of the New England Historical and Genealogical Society; specialist certified by the American Board of Dermatology and Syphilology; formerly chairman of the board of health of Winchester and a member of the board of selectmen; consultant to the Hale Hospital, Haverhill, Malden Hospital, Malden, Melrose Hospital, Melrose, and the Winchester Hospital, Winchester, all in Massachusetts, and to the Exeter Hospital, Exeter, N. H.; killed October 25, aged 58, when his automobile swerved over a curb.

Edmund **Arthur Weeks** ✠ Akron, Ohio; Western Reserve University Medical Department, Cleveland, 1900; past president and vice president of the Summit County Medical Society; member of the American Heart Association; on the medical examining staff of the armed forces induction station during World War II; formerly a member of the city board of health and of the board of trustees of the Sumner Home for Aged; member of the staff of the Akron City Hospital; formerly chief of staff of the Children's Hospital and the Peoples Hospital; died August 2, aged 69, of hypertension, heart disease and uremia.

John Wilson Adams ✠ Carrollton, Ill.; University of Nashville Medical Department, Nashville, Tenn., 1898; a captain in the medical corps, U. S. Army, during World War I; died in St. Francis Hospital, Litchfield, October 18, aged 74, of coronary thrombosis.

William Elijah Adams, Sinai, Ky.; University of Louisville Medical Department, Louisville, Ky., 1889; died September 14, aged 78.

Reuben Appleberry ✠ Farmington, Mo.; Barnes Medical College, St. Louis, 1903; president of St. Francois-Iron-Madison-Washington-Reynolds Counties Medical Society; for many years local health officer; served during World War I; on the staff of the Bonne Terre Hospital, Bonne Terre; died September 10, aged 63, of coronary thrombosis.

Joseph Theodore Auwers, Grand Rapids, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1915; died in the Blodgett Memorial Hospital September 12, aged 59.

Francis William Barton ✠ Danville, Ill.; Columbia University College of Physicians and Surgeons, New York, 1901; member of the Clinical Orthopaedic Society; fellow of the American College of Surgeons; served during World War I; district surgeon for the Chicago and Eastern Illinois Railroad; on the staffs of the Lakeview and St. Elizabeth's hospitals; died September 14, aged 69, of heart disease.

William James Basler ✠ West Leesport, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1917; president of the board of health; served during World War I; died in the Reading Hospital, Reading, September 13, aged 51, of typhoid.

George Willis Bass ✠ Minneapolis; University of Vermont College of Medicine, Burlington, 1881; served as secretary, 1889-1892, and as vice president, 1892-1893, Hennepin County Medical Society; died September 14, aged 85, of arteriosclerosis and hypertension.

Albert Turner Beckett, Salem, N. J.; Hahnemann Medical College of Philadelphia, 1873; served for one term as county physician; died in the Salem County Memorial Hospital September 17, aged 93.

George Laterra Bellina, North Bergen, N. J.; Regia Università degli Studi di Catania. Facoltà di Medicina e Chirurgia, Italy, 1938; member of the Medical Society of New Jersey; a member of the urology and venereal clinic, North Hudson Hospital, Weehawken; on the courtesy staff of the Margaret Hague and St. Francis hospitals in Jersey City; on the courtesy staff in surgery at St. Clare's Hospital, New York, where he died September 18, aged 31, of chronic glomerular nephritis.

Ray Anderson Bohl ✠ Stow, Ohio; Ohio State University College of Medicine, Columbus, 1931; served during World War I; captain in the medical reserve corps of the U. S. Army, not on active duty; died in St. Thomas Hospital, Akron, September 19, aged 44.

Wilbert White Bond ✠ Des Moines, Iowa; State University of Iowa College of Medicine, Iowa City, 1923; on the staffs of the Iowa Lutheran and Iowa Methodist hospitals; died September 21, aged 46, of cerebral hemorrhage.

William B. Brobst, Bellevue, Wash.; College of Physicians and Surgeons, Baltimore, 1898; died September 11, aged 73, of carcinoma of the stomach.

Charles Henry Brown ✠ Waterbury, Conn.; University of the City of New York Medical Department, New York, 1893; fellow of the American College of Surgeons; served on the staffs of the Waterbury and St. Mary's hospitals; died in Millinocket, Maine, September 7, aged 78, of cerebellopontine tumor.

James Alonzo Burke, Kansas City, Mo.; St. Louis College of Physicians and Surgeons, 1893; died September 10, aged 79, of coronary arteriosclerosis.

John Franklin Cameron, Hamilton, Ind.; Rush Medical College, Chicago, 1880; member of the Indiana State Medical Association; died September 20, aged 89.

Robert Newton Canaday ✠ Dupo, Ill.; Marion-Sims-Beaumont Medical College, St. Louis, 1902; physician for the Missouri Pacific Railroad; served as vice president of the Missouri Pacific Medical Association; died in the Missouri Pacific Hospital, St. Louis, September 18, aged 64, of coronary occlusion.

Nathaniel Austin Cary, Oakland, Calif.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; served as a lieutenant colonel in the medical corps of the U. S. Army during World War I; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; died September 12, aged 62, of coronary occlusion and chronic bronchial asthma.

Lloyd Hart Childs ✠ Flint, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; since 1916 medical director of the Chevrolet Motor Company; died September 18, aged 58, of coronary thrombosis.

John Aloysius Connelly, Trenton, N. J.; Jefferson Medical College of Philadelphia, 1915; member of the Medical Society of New Jersey; health officer of Trenton; served overseas during World War I; medical director and visiting surgeon to the New Jersey State Prison Hospital; member of the staff of St. Francis Hospital; died October 26, aged 51.

Samuel Denton, Buffalo Valley, Tenn.; Vanderbilt University School of Medicine, Nashville, 1890; formerly president of the Bank of Buffalo Valley; died August 31, aged 90, of heart disease.

Alfred Kennon Duckett, Blue Ridge, Ga.; Emory University School of Medicine, Atlanta, 1935; member of the Medical Association of Georgia; served an internship at the Spartanburg General Hospital, Spartanburg, S. C.; died August 18, aged 32.

Fayette Clinton Eshelman ✠ Hazleton, Pa.; Jefferson Medical College of Philadelphia, 1917; on the staff of the Hazleton State Hospital; local chief medical officer, emergency medical service, office of civilian defense in Hazleton; active member of the Rotary Club; died September 19, aged 54, of coronary occlusion.

Olive Winona Brown Hale, Glen Olden, Pa.; Ohio Medical University, Columbus, 1895; died October 18, aged 82, of myocarditis.

Charles Carleton Harbaugh ✠ Sedro Woolley, Wash.; Kansas City Medical College, Kansas City, Mo., 1895; served during World War I; formerly member of the city council and president of the chamber of commerce; died in the Memorial Hospital August 18, aged 75, of pneumonia.

William Patterson Clark Hazen ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1877; died October 29, aged 91, of generalized arteriosclerosis.

Emilio Leopold Hergert ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1896; served as a lieutenant in the medical corps of the U. S. Army during World War I; for many years physician for the health department; died in the Bushwick Hospital September 13, aged 71.

Henry Arch Herzer, Louisville, Ky.; University of Louisville School of Medicine, 1923; member of the Kentucky State Medical Association; served during World War I; on the staff of St. Anthony's Hospital, where he died August 26, aged 48, of coronary occlusion.

James Rembert Hopkins, Hopkins, S. C.; Louisville Medical College, Louisville, Ky., 1888; at one time auditor of Richland County and member of the house of representatives; served as a trustee of the school of Hopkins; died in the Lowman Home, White Rock, in August, aged 80, of coronary thrombosis.

Harry H. Hough, Albany, Ore.; Kansas City Homeopathic Medical College, Kansas City, Mo., 1893; died August 23, aged 75.

Meredith Woodson Hyatt, Willisburg, Ky.; Kentucky School of Medicine, Louisville, 1894; member of the Kentucky State Medical Association; formerly health officer of Washington County; served as examiner for the induction board and as a captain in the medical corps of the U. S. Army during World War I; formerly tuberculosis specialist for the Veterans Administration facilities in Outwood, Ky., and Johnson City; died suddenly August 9, aged 77, of heart disease.

RICHARD G. HENDERSON
P. A. SURG., U. S. P. H. S., 1913-1944

Dwight Lacey Jennings, St. Louis; St. Louis University School of Medicine, 1929; died in St. Anthony's Hospital August 23, aged 42.

Cleon Denton Johnson, Columbus, Ga.; Baylor University College of Medicine, Dallas, Texas, 1919; member of the Medical Association of Georgia; served during World War I; died August 21, aged 50.

Lombard Carter Jones, Falmouth, Mass.; Harvard Medical School, Boston, 1892; member of the Massachusetts Medical Society; member of the board of overseers at Harvard University for many years; died August 17, aged 78, of carcinoma of the prostate.

Claude Hamilton Kinnear ✠ Tacoma, Wash.; Jefferson Medical College of Philadelphia, 1889; formerly associated with the Indian Service; died August 10, aged 76, of coronary thrombosis.

Robert Laird, Detroit; Detroit College of Medicine and Surgery, 1928; member of the Michigan State Medical Society; served an internship at the Highland Park General Hospital; served during World War I; died August 13, aged 50, of bronchopneumonia and fibrosarcoma of the lung.

Boote Octave Le Blanc, St. Gabriel, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1903; also a pharmacist; member of the Louisiana State Medical Society; for many years president of the Sixth District Medical Society; died October 2, aged 66, of coronary thrombosis.

Archibald Cary Lewis ✠ Memphis, Tenn.; George Washington University School of Medicine, Washington, D. C., 1905; professor of ophthalmology at the University of Tennessee College of Medicine; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; specialist certified by the American Board of Ophthalmology; ophthalmologist, Memphis General, Baptist Memorial and St. Joseph's hospitals; died in the Methodist Hospital September 18, aged 67, of coronary occlusion.

Charles Lieber ✠ Waukegan, Ill.; University of Nebraska College of Medicine, Omaha, 1908; formerly county physician; served during World War I; formerly superintendent of the Lake County General Hospital; on the staffs of St. Therese's and Victory Memorial hospitals; died in Sidney, Neb., August 16, aged 57, of carcinoma of the liver and colon.

Treau Parvine Lynch, Iowa Park, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1900; died in Como August 21, aged 66, of heart disease.

Jacolyn Van Vliet Manning, Pasadena, Calif.; Northwestern University Woman's Medical School, Chicago, 1899; died October 17, aged 77.

Francis Xavier Matera ✠ Brooklyn; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1905; served as a lieutenant in the medical corps, Italian Royal Navy, during World War I; at one time on the staff, serving in the pediatric

DIED IN SPECIAL WAR SERVICE

Richard Gray Henderson ✠ Passed Assistant Surgeon, U. S. Public Health Service, Bethesda, Md.; St. Louis University School of Medicine, 1938; served an internship and residency in pathology at St. Mary's Group of Hospitals in St. Louis and a residency in surgery at the Henry Ford Hospital in Detroit; formerly assistant in pathology and graduate fellow in pathology at his alma mater; commissioned in the reserve corps of the United States Public Health Service in March 1942; detailed to the National Institute of Health in Bethesda, where he entered the division of infectious diseases for work on rickettsial infections; promoted to passed assistant surgeon April 1, 1944; during his two years with the public health service helped in the development and standardization of a neutralization test for typhus fever, for which, in recognition of his ability in this field, he was given direct supervision of the experimental work and full responsibility for it; also in charge of testing potency of all lots of typhus vaccine submitted by various laboratories where the vaccine is manufactured; had also worked with other members of the typhus unit on an extensive study of human reaction to primary and booster vaccination with various types of typhus fever vaccines; died in the Naval Hospital October 20, aged 31, of tsutsugamushi fever which he contracted while attempting to develop a vaccine for the disease.

department, Kings County Hospital; died October 23, aged 64, of heart disease.

George Grant McConnell, Mooresville, Ind.; Rush Medical College, Chicago, 1892; died August 11, aged 78, of hypertensive heart disease and diabetes mellitus.

John M. McCuan, Farwell, Texas (licensed in Texas by years of practice); past president of the Kaufman County Medical Society; for many years health officer of Parmer County; died July 2, aged 79, of heart disease.

John Joseph McDonald, Washington, D. C.; Medical College of Virginia, Richmond, 1926; died in the Glenn Dale Sanatorium, Glenn Dale, Md., August 30, aged 43, of pulmonary tuberculosis.

Edward Joseph Meyer, Louisville, Ky.; University of Louisville School of Medicine, 1909; member of the Kentucky State Medical Association; died in the SS Mary and Elizabeth Hospital August 1, aged 58, of coronary thrombosis.

Connor Joshua Miller, Inman, S. C.; Medical College of the State of South Carolina, Charleston, 1915; member of the South Carolina Medical Association; served during World War I; on the staff of the Spartanburg General Hospital, Spartanburg, died August 21, aged 55, of coronary occlusion.

Arthur Venton Murtha, Pontiac, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1914; U. S. Army Medical School, 1918; member of the Michigan State Medical Society; served during World War I; member and past president of the medical staff of Pontiac General Hospital; on the staff of St. Joseph Mercy Hospital; since 1921 medical director of the Wilson Foundry and Machine Company; died in the University Hospital, Ann Arbor, August 19, aged 54, of heart disease.

George W. Nesbitt, Sycamore, Ill.; Northwestern University Medical School, Chicago, 1892; member of the Illinois State Medical Society; received a fifty year certificate and gold emblem from the DeKalb County Medical Society in March 1943; died August 22, aged 75, of cerebral hemorrhage.

Saul D. Nevard, Peekskill, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1922; also a dentist; died in Yonkers August 1, aged 51, of coronary thrombosis.

Evald Olson ✠ Lovell, Wyo.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1907; killed in an automobile accident August 2, aged 72.

Ira Frederick Richardson, Fremont, Neb.; Kansas City Hahnemann Medical College, Kansas City, Mo., 1903; member of the Nebraska State Medical Association; died August 6, aged 71, of virus pneumonia and myocarditis.

Frank Remington Sheppard, Millville, N. J.; Medico-Chirurgical College of Philadelphia, 1903; member of the Medical Society of New Jersey; served during World War I; on the staffs of the Newcomb Hospital, Vineland, and the Millville Hospital; died August 15, aged 63, of coronary thrombosis.

Raymond Victor Shroba, Joliet, Ill.; Loyola University School of Medicine, Chicago, 1928; member of the Illinois State Medical Society; on the staff of St. Joseph's Hospital; accidentally drowned in Plano August 14, aged 41.

Louie Leo Steiner ✠ Danville, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; on the staffs of the Lake View and St. Elizabeth hospitals; died in Petoskey, Mich., August 19, aged 65, of coronary occlusion.

LIEUT. (JG) VITO V. STABILE
(MC), U.S.N.R., 1917-1944

LIEUT. (JG) JOHN J. GIBBONS JR.
(MC), U.S.N.R., 1912-1943

LIEUT. WARREN G. PARISH
(MC), U.S.N.R., 1907-1944

KILLED IN ACTION

Vito Victor Stabile, Detroit; Wayne University College of Medicine, Detroit, 1943; served an internship at the Grace Hospital; commissioned a lieutenant (jg), medical corps, U. S. Naval Reserve, on May 17, 1943; killed in action in the European area June 19, aged 27.

John Joseph Gibbons Jr., Avoca, Pa.; Georgetown University School of Medicine, Washington, D. C., 1936; served an internship at the Scranton State Hospital, Scranton, Pa.; commissioned a lieutenant (jg) in the medical corps of the U. S. Naval Reserve on April 8, 1942; killed in action at sea in the Pacific area; aged 31; presumptive date of death, Nov. 14, 1943, according to the Navy Department.

Warren Griffith Parish, Cleveland Heights, Ohio; University of Pennsylvania School of Medicine, Philadelphia, 1933; member of the Ohio State Medical Association, Cleveland Academy of Medicine and the Cleveland Clinical Society; served an internship at the Philadelphia General Hospital, Philadelphia, and a residency in medicine at the University Hospitals, Cleveland; commissioned a lieutenant in the medical corps of the U. S. Naval Reserve on Aug. 6, 1942; served in the South Pacific since February 1943; had been assigned to a marine division which served in New Zealand and Guadalcanal; died on a hospital ship in the Pacific area July 29 of wounds received during the invasion of Guam, aged 36.

Bureau of Investigation

DANGEROUS TO HEALTH

When Used as Directed

[Editorial Note.—These abstracts concern preparations which were specifically declared by the Food and Drug Administration of the Federal Security Agency to be dangerous when used in accordance with the directions given on the label by the manufacturer. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

A. M. Solution.—Kenton Pharmacal Company, Covington, Ky. Shipped Nov. 13, 1941, and Jan. 14, 1942. Composition: essentially a solution of chrysarobin (approximately 0.66 grain per fluid ounce), salicylic acid, benzoic acid, alcohol, and a volatile oil. Misbranded because dangerous to health when used in dosage or with frequency or duration recommended in labeling. Also misbranded because of false and misleading label statements: "For the relief of itching and discomfort of Athlete's Foot (Dermatophytosis), Ringworm, Insect Bites, Impetigo, externally caused Eczema, Rashes and Pimples, and other forms of local skin irritations."—[*D. D. N. J., F. D. C. 703; April 1943.*]

Dependon Products Intrauterine Paste.—Anne M. Jenks, trading as Dependon Products and Jenks Physicians' Supplies, White Bear Lake, Minn. Many shipments reported from 1930 on. Composition: a viscous, yellowish liquid containing a watery solution of potassium soap, alcohol, glycerin and compounds of iodine. Misbranded because, among other things, dangerous to health when used in dosage or with frequency that label suggested, for terminating pregnancy, inducing labor and removing retained parts of the products of conception; also misbranded because name on package and statements in accompanying circular suggested that the paste was safe for the aforementioned purposes, whereas it might produce even fatal consequences; further misbranded because falsely represented as effective in treating dysmenorrhea, endometritis and cervical and uterine discharges. On Jan. 19, 1943, a district federal court in Minnesota issued a permanent injunction against Anne M. Jenks, forbidding her further shipping her Intrauterine Paste as such, or as "Dependon Products Paste" or under any other name or in any similar mixture, in interstate commerce. The injunction also applied to all persons assisting her in the business.—[*D. D. N. J., F. D. C. 751, September 1943.*] *D. D. N. J., F. D. C. 752* was also issued against Anne M. and W. S. Jenks, when they pleaded guilty to illegal (under the preliminary injunction) interstate sale of product in question and were fined, respectively, $250 and $500. A third case involving a shipment of the Paste by Anne M. Jenks, trading as Dependon Products and Jenks Physicians' Supplies, was not defended by her and the court confiscated the shipment.—[*D. D. N. J., F. D. C. 753; September 1943.*]

Dr. Hand's Worm Elixir.—Smith, Kline & French Laboratories, Philadelphia. Shipped Feb. 17, 1942. Composition: essentially extracts of plant drugs, including santonin and a laxative, in a vehicle of syrup, a small amount of alcohol, and flavoring. Misbranded because dangerous to health when used in the dosage and with the frequency or duration prescribed in labeling, since each recommended dose of santonin was sufficient to produce serious poisoning.—[*D. D. N. J., F. D. C. 804; December 1943.*]

Gilmore's Headache Powders.—Don Gilmore Laboratories, Inc., Cleveland. Shipped Nov. 11 and Dec. 9, 1941. Composition: in each powder 6.93 grains of acetanilid, 2.61 grains of caffeine citrate, and 2.5 grains of sodium bicarbonate. Adulterated because strength differed from that which product was represented to possess. Misbranded because dangerous to health when used in dosage or with frequency or duration recommended in labeling, since latter would provide for administration of almost 14 grains of acetanilid in 20 minutes; also misbranded because labeling failed to warn adequately against use by children or in those pathologic conditions wherein it might be dangerous to health, or against unsafe dosage or method or duration of administration, since the powders contained acetanilid, frequent or continued use of which might cause serious blood disturbances, anemia, collapse or dependence on the drug; misbranded, finally, because label declarations as to proportions of ingredients were false and misleading.—[*D. D. N. J., F. D. C. 755; September 1943.*]

Luebert's Ka-No-Mor Capsules.—A. G. Luebert, Wilmington, Del. Shipped May 17 and June 27, 1941. Composition: acetanilid (3 grains per capsule), caffeine and aspirin. Misbranded because dangerous to health when used with the frequency or duration recommended in labeling; also misbranded because label failed to warn against giving to children and against unsafe dosage or duration of administration, since labels failed to restrict number of doses, and though circular limited their use to 5 capsules a day, such use constituted an excessive dosage of acetanilid. Further misbranded because directions provided for giving excessive amount of acetanilid. Again misbranded because label did not conspicuously warn against use in those pathologic conditions wherein use might be dangerous to health. Likewise misbranded because certain label statements which represented that the capsules, when used as directed, were a safe and appropriate treatment for relieving pain and discomfort of simple headache, neuralgia and muscular aches and pains and some other conditions, were false and misleading. Misbranded, finally, because label did not warn that use of product according to directions might cause serious blood disturbances, anemia, collapse, or a dependence on the drug.—[*D. D. N. J., F. D. C. 754; September 1943.*]

Luebert's Noxem Brand Tablets and Capsules.—A. G. Luebert, Wilmington, Del. Shipped May 17 and June 27, 1941. Composition: (tablets) essentially sodium salicylate, caffeine, strychnine sulfate and a laxative plant drug; (capsules) essentially acetanilid (3 grains per capsule), aspirin and caffeine. Misbranded because dangerous to health when used with frequency or duration recommended on label; further misbranded because label failed to warn against giving to children because of acetanilid and strychnine content and to elderly persons because of strychnine content. Also misbranded because administration over a long period of time would be unsafe on account of the strychnine present, and because the acetanilid, when given in frequent or continued dosage, might result in serious disturbances, anemia, collapse, or dependence on the drug; again misbranded because of false label representation that product was an adequate treatment for rheumatic fever and an appropriate one for aches and pains of neuralgia, gout and muscles; misbranded, finally, because label did not list one ingredient, aspirin, under its common or usual name, or declare quantity or proportion of the strychnine sulfate present.—[*D. D. N. J., F. D. C. 754; September 1943.*]

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[Editorial Note.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated D.D.N.J. and foods, F.N.J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

Blue Cross First Aid Kits.—Sol Levy, Philadelphia, and Hampton Manufacturing Company, Carlstadt, N. J. Shipped Feb. 16, 1942. Adulterated because the absorbent cotton that they contained was not sterile, but was contaminated with viable aerobic and anaerobic or facultative anaerobic micro-organisms, and hence fell below the standard of the United States Pharmacopeia. Misbranded for the same reason, and because outside container did not bear an accurate statement of the quantity of contents or of the quantity or proportion of mercurochrome.—[*D.D.N.J., F.D.C. 796; September 1943.*]

Blue Cross Gauze Bandage Sterilized.—Hampton Manufacturing Company, Carlstadt, N. J. Shipped Feb. 16 and 18, 1942. Adulterated because its purity or quality fell below that which it was represented to possess, since approximately one half of the bandages were contaminated with viable cocci or spore-forming micro-organisms. Misbranded because falsely claimed to be "Sterilized," whereas it was not.—[*D.D.N.J., F.D.C. 798; September 1943.*]

Bu-U Diuretic.—Standard Drug Company, Inc., Spartanburg, S. C. Shipped Feb. 28 and March 13, 1941. Composition: essentially water, extracts of plant drugs (not named), and small amounts of potassium acetate and alcohol, preserved with sodium benzoate and colored with caramel. Misbranded because label falsely represented that product was a diuretic, would strengthen the kidneys and assist in eliminating poisons and wastes from the system.—[*D.D.N.J., F.D.C. 805; December 1943.*]

Cherry Balsam.—Standard Drug Company, Inc., Spartanburg, S. C. Shipped Feb. 28 and March 13, 1941. Composition essentially extracts of plant drugs (not named), chloroform (0.76 minim per fluid ounce), sugar and water. Adulterated because strength differed from, and quality fell below, that represented. Misbranded because of false label representations as to efficacy in preventing, curing or treating chronic coughs.—[*D.D.N.J., F.D.C. 805; December 1943.*]

Dr. Ray Wheat Embryo.—Freshman Vitamin Company, Detroit. Shipped Feb. 27, 1941. Composition not reported. Misbranded because of false label representation that product was indicated, and of significant value, in treatment of all types of gastrointestinal disturbances, whereas it was not.—[*D.D.N.J., F.D.C. 788; September 1943.*] Also misbranded under provisions of law applicable to foods, as reported in *F.N.J.* 3842.

Howell's Blue Label Cough Syrup.—Howell Company, Inc., New Orleans. Shipped between Feb. 21, 1940, and Jan. 6, 1941. Composition: a brown syrupy liquid containing 0.35 minim of chloroform per fluid ounce. Adulterated because not of the strength claimed, namely, 3 minims of chloroform per fluid ounce. Also misbranded because this claim was false and misleading.—[*D.D.N.J., F.D.C. 807; December 1943.*]

Howell's Hi-Qual Balm.—Howell Company, Inc., New Orleans. Shipped between Feb. 21, 1940, and Jan. 6, 1941. Composition: a mixture of oils of peppermint and eucalyptus, with camphor, menthol and ephedrine in a petrolatum base. Misbranded because of false and misleading label representation that it would be efficacious in treatment of head colds, croup and hemorrhoids, whereas it would not.—[*D.D.N.J., F.D.C. 807; December 1943.*]

Correspondence

PHYSIOLOGIC ACTION OF IN VIVO ANTICOAGULANTS

To the Editor:—The editorial "Physiologic Action of In Vivo Anticoagulants," published in the September 30 issue of THE JOURNAL, is most timely and serves an excellent purpose in reviewing some of the effects of heparin and dicumarol.

The statement that Davidson and MacDonald reported in their communication published in the *American Journal of the Medical Sciences* (**205**:24 [Jan.] 1943) that they observed a reversal of dicumarol effect by large doses of vitamin K_1 oxide is an error. Their conclusion in this particular paper was "Vitamin K (synthetic) was found not to act in any way as an antidote to the effect of administration of the drug." The fact is, on the contrary, that after Link showed in animals that vitamin K at high levels neutralized dicumarol induced prothrombinopenia, Shapiro and his co-workers were the first to confirm this in man (*Proc. Soc. Exper. Biol. & Med.* **52**:12 [Jan.] 1943). In August 1943 Davidson and MacDonald (*New England J. Med.* **229**:353) and in May 1944 (*Proc. Staff Meet., Mayo Clin.* **19**:218) Cromer and Barker reported success in accomplishing the same result in man.

The editorial gives the impression that the prothrombinopenia inducing action of salicylates was discovered independently by Rapaport and his co-workers. An examination of their paper discloses the contrary fact: that their investigation was undertaken after the report by Link and his students appeared in the *Journal of Biological Chemistry*. Apropos of this, certain interesting facts deserve mention: Link announced in his paper that his observations in animals had been confirmed in man by Dr. O. O. Meyer of the University of Wisconsin and Dr. Shepard Shapiro of New York University, to whom he had communicated his findings. This seems to have escaped the attention of Rapaport and his associates, as apparently did the fact that vitamin K had been found by the agricultural chemists of Wisconsin to counteract the prothrombinopenic inducing action of salicylic acid. Curiously enough the suggestion is made in Rapaport's paper that the action of vitamin K on the salicylic acid effect should be studied.

Anticoagulant therapy is a relatively new form of treatment. A rather extensive contact with physicians in the different branches of medicine and surgery has revealed to me the fact that the potentialities of heparin and dicumarol are in general little appreciated, that the modes of application are often not understood and that misconceptions concerning the possible hazards involved in the use of these therapeutic agents are very widespread. Because it serves to stimulate interest in these subjects, the editorial is highly commended.

SHEPARD SHAPIRO, M.D., New York.

COMMENT.—The letter of Dr. Shapiro adds some interesting bibliographic data. THE JOURNAL is glad to have pointed out the error in the quotation of the article of Davidson and MacDonald in the *American Journal of the Medical Sciences*. It was in the article which appeared in the *New England Journal of Medicine* that these same authors reported a reversal of dicumarol with the use of large doses of vitamin K_1 oxide.

The report of Rapaport and his co-workers in the *Proceedings of the Society for Experimental Biology and Medicine* indicates that the finding of a bleeding tendency following the use of large doses of salicylates was made without regard to the findings of Link and his associates, although their work is mentioned in this article. It is believed that this observation was not made in the nature of a confirmation of Link's work but was observed independently.—ED.

HEALTH ASSOCIATION DECLARATION

To the Editor:—I have noted with regret the leading editorial in your issue of October 14 entitled "American Public Health Association Health Insurance Declaration." As one of those who voted for the proposed amendment and against the final adoption of the report, I wish to correct certain prejudicial impressions which I believe will be given to a body of your readers relative to the representative character of the Governing Council.

I am willing to accept the figures given in the editorial as to the number of members and Fellows, respectively, in the American Public Health Association. I would call attention, however, to the fact that the only members of the Governing Council whose election is restricted to a vote of the Fellows are the 30 out of something over 100 mentioned in your editorial. The 41 members of the council representing the sections are elected by the membership and fellowship of each section.

Likewise, representatives of the affiliated societies and branches are elected by their fellowship and membership in accordance with their respective constitutions and by-laws.

The Council is, therefore, a representative body, as is the House of Delegates of the American Medical Association. Membership in the Council and the right to hold office in the Association are restricted to Fellows, as they are in the American Medical Association.

The adoption of the subcommittee's report by a large majority of the quorum present is therefore quite as proper and as much in order as any action taken by the House of Delegates of the American Medical Association and, in my opinion, equally representative of the opinion of the entire membership.

I voted for the amendment proposed by Dr. Bierring because I feel that the cooperation of the medical and dental professions is essential to the successful operation of any plan designed to extend medical care and to improve its quality.

On the other hand, I think that the attitude of the American Medical Association has been such that a majority of the Council felt that a conference on the subject would prove futile and would merely delay an expression of opinion from the American Public Health Association on a subject on which their minds were made up. The tone of your editorial would tend to confirm that opinion.

My vote against the resolution to adopt was based on my not having taken time, personally, to examine the report and study its content.

EDWARD S. GODFREY JR., M.D., Albany, N. Y.
Commissioner of Health.

ILEITIS

To the Editor:—I am rather astonished at your editorial in THE JOURNAL, October 21. Apparently the underlying pathology of these lesions is not understood. Ileitis is just one of the manifestations of chronic nonspecific granulomatous lesions of the alimentary tract; and unfortunately this has been lost sight of in the communications which have appeared in the literature.

As I stated in my paper in *Surgery* for August 1939, the available facts indicate that hypertrophic granulomatous lesions are encountered in infections with amebas, in infections by various strains of the dysentery group, in the group of so-called nonspecific ulcerative colitis associated with previously existing conditions, such as diverticulitis, or as a chronic development unassociated apparently with any preceding condition. In the gastrointestinal tract the characteristic part of the lesion consists in a spread of a surface lesion to an intramural position in the wall of the alimentary canal. Essentially the lesion seems to be a form of chronic infection of the lymphatic apparatus of the deeper layers of the bowel wall which implicates the solitary and aggregated collections of lymphadenoid follicles, the lym-

phatic channels and the associated lymph nodes in the appropriate part of the mesentery. During the development of the lesion, the original agent of infection commonly disappears and secondary infection takes place. As a consequence of this, intramural abscesses form. During the healing or attempted healing of the latter, cicatrization is accompanied by the excessive production of scar tissue; and the latter causes a hypertrophic thickening of the bowel wall with subsequent stenosis.

The nonspecific granulomatous lesion represents the end result of a diversely initiated lesion of the bowel wall marked by intramural lymphatic infection and subsequent evidences of an attempted overproductive but unsuccessful healing.

These forms of lymphatic infection in the bowel either localize themselves to a restricted part of the bowel wall or they characteristically involve extensive continuous or interrupted segments, as in all infections of the lymphatic apparatus. It is incorrect to consider the latter as independent localizations. Sometimes the latter are due to irregularities in healing power, which result in complete healing in some parts and no healing in others. The relative frequency with which this pathologic condition affects the terminal ileum is due directly to the relative frequency with which this disease begins in the appendix, its most frequent seat of origin. Both the localized and the diffuse forms exhibit the tendency to exacerbations of infection, during which there is the same possibility of spreading of the lesion along further lymphatic channels.

If one understands that this disease is in reality a "lymphangitis" of the intestinal wall, one should not expect any single specific cause any more than one expects that in lymphangitis of the skin.

A. O. Wilensky, M.D., New York.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Pilonidal Cyst Diagnosed as Furunculosis and Treated with X-Rays.—The patient consulted the physician defendant, "a specialist in the use of x-ray," regarding a "sore" at the base of the spine. According to the patient, the physician told him that the "sore" was a pilonidal cyst and recommended x-ray treatments. The physician, however, claimed that he diagnosed the trouble as furunculosis. In any event, a course of roentgen therapy was instituted and apparently in the process "large areas of rectal tissue" were destroyed, burned or permanently maimed. Other physicians then undertook the care of the patient, diagnosing his ailment as a pilonidal cyst and removing the cyst surgically. Subsequently the patient sued the physician for malpractice based on alleged improper diagnosis and treatment. At the trial the weight of the testimony of expert witnesses called was to the effect that the use of the roentgen ray is not a proper treatment for pilonidal cyst. As to the propriety of its use for furunculosis, the expert witnesses called differed. From a judgment for the patient the physician appealed eventually to the Court of Errors and Appeals of New Jersey.

At the trial the patient called several physicians who did not hold themselves out as especialists in the use of the roentgen ray but who were permitted to answer "questions [that] had to do with x-ray and the like." The physician contended that since these physician witnesses did not hold themselves out as specialists in the use of the roentgen ray they were not competent to testify thereon. It is well established, answered the court, that having qualified as "medical doctors" the physician witnesses referred to are competent to testify on all medical subjects in which they claim sufficient ability to express an opinion. The qualification of an expert is for the determination of the trial court, and such determination will not be disturbed where the ruling is supported by evidence. If the witnesses do not possess sufficient knowledge, that deficiency may be disclosed on cross examination. The objection made by the defendant in this case goes to the weight to be accorded the opinion evidence rendered by those witnesses rather than to the competence of their evidence.

The defendant physician next contended that the trial court erred in refusing to grant a nonsuit on the ground that the patient had produced no evidence of a wilful or wanton injury and in refusing to instruct the jury that it must, to justify a finding in favor of the patient, find that the defendant had wilfully and wantonly inflicted injury on his patient. But, said the court, the complaint filed in this case charged negligence, carelessness and lack of skill in some paragraphs. In one paragraph it charged that the physician had carelessly, unskilfully, recklessly, negligently and wantonly inflicted stated injuries on the patient, and in another paragraph it charged that the physician had "failed to exercise reasonable skill, proper care and diligence" and "failed to properly avail . . . [himself] of remedies, cures, treatments required through the use of ordinary and reasonable skill." Thus it will be noted, continued the court, that the complaint charges the defendant with wilful and wanton conduct, but it also charges him with negligence in the performance of his services. Therefore, the cause of action submitted to the jury was within the outline of the complaint, and the patient was not required to allege or prove wanton injury.

At the trial, hypothetical questions were propounded to expert witnesses and, when objections were made thereto, further facts were added to the questions and the witnesses were permitted to answer the questions thus supplemented or amended. The entire questions in completed form were not repeated to the witnesses at the time they were finally permitted to answer. The defendant physician contended that this was error. But, answered the court, there is no doubt that the witnesses understood the questions and made answers directly thereto. *Shoemaker* v. *Elmer*, 70 N. J. Law 710, 58 A. 940, relied on by the physician as authority for his contention, in the opinion of the court presented an entirely different situation. There a question was held to be improper when it was based in part on what the witnesses had heard other witnesses say in the course of the trial and on questions asked other witnesses. Here the questions were propounded directly to the witness concerned, and the mere fact that the earlier part of the question was not repeated was not error, as the witness understood them and, the questions being usually rather lengthy, nothing would have been gained and much time would have been lost. In any event, the court concluded, the defendant physician was not injured.

The next claim of error urged by the defendant physician concerned a question asked at the trial of an expert witness called by the patient. Apparently this witness had examined the patient merely for the purpose of testifying and was not an attending physician. The rule that such a witness may not use information given to him as a basis for his testimony concerning the condition of the patient but must rely on his own observation was relied on by the defendant physician as a basis for indicating that the trial court had erroneously permitted this witness to testify. In answer to the question objected to, this witness stated:

> I have to say that by ocular proof, by touch, and by the remains of the material that has been destroyed or altered in form, that the dosage of x-ray given is many times the safety dosage which would produce only an erythema.

It is apparent, therefore, said the court, that the witness, as declared in his answer, was relying solely on his own examination of the plaintiff and his knowledge of the subject as an expert.

The physician next contended that the trial court erred in submitting "to the jury the question of improper diagnosis." As pointed out above, said the court, the complaint alleged that the services were "carelessly, negligently, improperly and unskil-

fully" performed and that the defendant failed to "exercise reasonable skill, proper care and diligence" and "failed to properly avail [himself] of remedies, cures, treatments required through the use of ordinary and reasonable skill." The trial judge merely recited the contentions of the plaintiff in this connection and charged the jury as follows:

> So out of those pleadings, then come these questions: Was the doctor guilty of being unskilful and careless in the treatment of Mr. Young? Was Mr. Young damaged as a result of this unskilful or careless treatment by the doctor?

However, continued the court, the complaint was clearly broad enough to cover such an allegation. There was no error therein.

The trial court refused to give certain instructions tendered by the defendant physician, stating in varying ways the law relating to the measure of duty assumed by the physician, and the refusal of the trial court to give the instructions so tendered was relied on as error by the physician. The skill and care required of a physician, said the court, is stated in *Ely* v. *Wilbur*, 49 N. J. Law 685, 10 A. 358, 60 Am. Rep. 668, as follows:

> . . . the skill and care required in doing the work, in order to deserve compensation, is that ordinarily possessed and exercised by others in like callings. . . . The physician, like the attorney, undertakes, in the practice of his profession, that he is possessed of that degree of knowledge and skill which usually pertains to the other members of his profession. And the physician, in attending his patients, engages that he will use due care to discover the nature of the disease which gives occasion for his services, and in applying the usual remedies; but beyond this measure of skill and diligence the law makes no exaction. If he is to be held for results, or as a guarantor of success, it can be only in virtue of his express agreement. . . . Ordronaux, in his Jurisprudence of Medicine, states the rule in question clearly. "The physician," he says, "is not a guarantor, without express contract of the good effects of his treatment, and he only undertakes to do what can ordinarily be done under similar circumstances. If the good effect of his treatment, and the consequent value of his services, be disputed, he must be prepared to show that his labor was performed with the ordinary skill and in the ordinary way of his profession."

The trial judge, continued the court, charged at considerable length as to the duties of a physician. One of the instructions tendered by the physician that was refused by the trial court would have told the jury that:

> A doctor in the practice of his profession, without express contract, is never an insurer of the good effects of his treatment, so that the mere fact that treatment given in any case does not result satisfactorily or beneficially to the patient is not evidence of negligence.

The trial court instructed the jury that the implied engagement of the physician with his patient does not guarantee a good result. That instruction covered the essence of the tendered instruction just quoted and it covered all of the tendered instruction that was sound because the statement in the tendered instruction that because the treatment given does not "result satisfactorily or beneficially to the patient is not evidence of negligence" is too broad. The fact of nonbeneficial result may or may not be evidence of negligence. If despite proper diagnosis and treatment no benefit resulted, no negligence could be charged, but if the treatment failed because of failure to exercise reasonable diligence, knowledge or skill, the result may be evidence of negligence.

Another instruction tendered by the defendant that was refused by the trial court would have told the jury that mere mistake or error is not sufficient to decide the case against the physician and that if the jury found that there was mere mistake or error, and nothing more, then its verdict must be for the defendant physician. This tendered instruction, said the court, was properly rejected as submitted because it excluded all responsibility for mistake or error based on lack of reasonable care, diligence and skill. If the mistake or error had been duly limited to mistake in judgment only, after due consideration of the patient's ailment, it would have been sound, but to exclude every possible ground of improper conduct that might induce the mistake or error was, in effect, to say that the defendant physician could not be held accountable for error although that error was induced by failure to exercise that degree of care and knowledge that might be expected of a physician similarly situated.

Another tendered instruction rejected by the judge the appellate court held to be rejected properly because it, in substance, relieved the defendant physician of any duty to exercise reasonable care to diagnose the patient's condition. That tendered instruction would have told the jury that if the defendant applied the treatment he thought proper for "the condition as [he, the defendant] diagnosed the case, . . . your verdict must be for the defendant." But, said the appellate court, the duty of the physician was not limited to proper treatment of what he considered to be the plaintiff's ailment but also extended to the exercise of reasonable care to ascertain the ailment to which proper and appropriate treatment should be applied.

The judgment in favor of the patient was accordingly affirmed. —*Young v. Stevens, 39 A. (2d) 115 (N. J., 1944).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and of Examining Boards in Specialties were published in THE JOURNAL, November 11, page 726.

BOARDS OF MEDICAL EXAMINERS

ALASKA: Juneau, March. Sec., Dr. W. M. Whitehead, Box 561, Juneau.

CONNECTICUT: * *Endorsement.* Hartford, Nov. 28. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DISTRICT OF COLUMBIA: * Washington, November. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 20-21. Sec., Dr. Harold D. Van Schaick, 2736 S.W. Seventh Ave., Miami 36.

IDAHO: Boise, Jan. 8-11. Dir., Bureau of Occupational Licenses, Mrs. Lela D. Painter, 355 State Capitol Bldg., Boise.

INDIANA: Indianapolis, Jan. 3-5. Exec. Sec., Board of Medical Registration and Examination, Miss Ruth V. Kirk, 301 State House, Indianapolis 4.

MARYLAND: *Homeopathic.* Baltimore, Dec. 1-3. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

NEW HAMPSHIRE: Concord, March 8-9. Sec., Board of Registration in Medicine, Dr. D. G. Smith, 77 Main St., Nashua.

NORTH DAKOTA: Grand Forks, Jan. 2-5. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

SOUTH CAROLINA: Columbia, June 25-27. Sec., Dr. N. B. Heyward, 1329 Blandina St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 16-17. Sec., Medical Licensure, State Board of Health, Dr. G. Cottam, Pierre.

TEXAS: Dallas, Dec. 19-21. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

VERMONT: Burlington, June. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: * Richmond, June 20-23. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WASHINGTON: * Seattle, Jan. 15-17. Dir., Department of Licenses, Mr. Thomas A. Swayze, Olympia.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, Dec. 6-7. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

IOWA: Des Moines, Jan. 9. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

NEW MEXICO: Santa Fe, Feb. 12. Sec., Miss Marion M. Rhea, State Capitol, Santa Fe.

SOUTH DAKOTA: Aberdeen, Dec. 1-2. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: Memphis and Nashville, Dec. 18-19. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WISCONSIN: Milwaukee, Dec. 2. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee 3.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

14: 25-60 (Aug.) 1944

Schemm Treatment of Chronic Heart Failure with Edema: Report of Illustrative Case. R. Lyons.—p. 25.
Management of Ureteral Calculi. A. A. Stabler.—p. 28.
Appendicitis and Complications. J. L. Hardwick.—p. 39.

14: 61-84 (Sept.) 1944

Prognosis and Treatment of Carcinoma of Larynx. F. E. LeJeune.—p. 61.
Herniation of Intervertebral Disk. C. H. Moore.—p. 64.
*Treatment of Chronic Intestinal Indigestion with Vitamin B Complex and Liver Extract. J. H. Baumhauer.—p. 66.

Treatment of Chronic Intestinal Indigestion.—Baumhauer thinks that many cases of chronic intestinal indigestion may be treated along the same lines as celiac disease, which has long been recognized as a kind of chronic intestinal indigestion affecting infants and children. It has now become accepted that the primary fault is a defective absorption from the intestine, particularly of fats and carbohydrates. These children exhibit loss of appetite, failure to gain in weight, late sitting, standing and walking, fretfulness, aversion to normal play, diarrhea, poor sleeping habits and repeated respiratory infections. The nervous symptoms are many and varied. The child is irritable, languid and easily fatigued. The hands and feet are cold. Sleep is usually restless, with frequent grinding of the teeth, outcries, dreaming and not infrequently night terrors. Tetany or convulsions may develop. Thirty cases are included in this study. The injections were given weekly: 0.25 cc. of B complex in one buttock and 0.5 cc. of liver extract in the other. The treatment was augmented by the use of liver extract and vitamin B complex, and all the essential vitamins by mouth, as well as a liberal diet. In cases of iron deficiency anemia, iron too was given. Improvement was evidenced by the improved disposition of the child. Instead of a whiny, fretful infant the baby became more easily handled, more active and more alert to his surroundings. Nearly all of these children gained weight, and in doing this the tissue turgor improved. If they exhibited anemia, this condition improved also. Failure resulted when the children had an acute, chronic or intercurrent infection.

American Journal of Clinical Pathology, Baltimore

14:365-424 (July) 1944

*Blood Alcohol and Intoxication: Its Value in Borderline Cases. A. O. Gettler, A. W. Freireich and H. Schwartz.—p. 365.
*Volumetric Pattern of Aspirated Normal Human Sternal Marrow of Males 18 to 40 Years. E. M. Schleicher.—p. 370.
Colloidal Copper Reaction in Cerebrospinal Fluid in Uremia. G. C. Linder.—p. 380.
Unreliability of Ordinary Cultures in Chronic Infections. M. Solis-Cohen.—p. 386.
Fatal Bismuth Poisoning in Course of Antisyphilitic Treatment. M. Wachstein.—p. 392.
Acute Isolated Myocarditis: Case Report. W. W. Coulter and P. Marcuse.—p. 399.
Aneurysm of Abdominal Aorta with Rupture into Duodenum: Report of 3 Cases. H. R. Pratt-Thomas.—p. 405.
Studies on Dog with Severe Asthmatic Attacks. W. H. Olson, M. Appel and H. Necheles.—p. 413.
Seminoma in Testis of Dog. W. C. Hueper.—p. 418.

Blood Alcohol and Intoxication.—The purpose of the experiments presented by Gettler and his associates in this paper was to get additional data concerning the relation between the alcohol content of the brain and that of the blood. Twenty-eight dogs weighing between 6 and 10 Kg. were used. These investigations corroborate previous observations on human subjects, namely that the alcohol content of the blood differs appreciably from the alcohol content of the brain, the blood-brain ratio ranging from 0.77 to 2.09. It is fallacious to take an average of a number of blood-brain ratios and, because this average ratio approaches unity, conclude that the alcohol content of the brain and of the blood is the same in any person at any given time. The blood-brain alcohol ratio may vary widely from any accepted average. In borderline cases (0.15 per cent blood alcohol) it is impossible to state definitely from the alcoholic content of the blood whether the subject was intoxicated or not. Since the alcohol content of urine, saliva and expired air depends in part on the alcohol content of the blood, it is equally fallacious to use them as an index of intoxication in the borderline cases.

Volumetric Pattern of Aspirated Human Sternal Marrow.—Schleicher shows that the variance of the range of the normal myeloid-erythroid volume obtained by different investigators suggests that the samples probably were not representative of the cellularity of the sternal part of the normal marrow organ, because the data were derived from subjects not only selected at random but also irrespective of their age, sex and health status. The author demonstrates that the myeloid-erythroid volumes including the fat, plasma and erythrocyte volume obtained from 1 cc. of aspirated, heparinized and centrifuged normal human sternal marrow of 12 healthy and carefully selected men between 18 and 40 years of age differ from the figures recorded in the literature. The four gross components (sharply separated in the hematocrit tube) show a remarkable uniformity of their respective volume range. The range and mean were as follows: fat 0.5 to 3.0, mean 1 volume per cent; plasma 39 to 48.5, mean 44 volumes per cent; myeloid-erythroid 4 to 6, mean 5 volumes per cent; erythrocytes 45 to 54, mean 50 volumes per cent. A method is described for obtaining "gross marrow units" suitable for histologic work and for determining the pattern of the normal "microscopic marrow unit." The combined volumetric-histologic method may be used as a means of elucidation of the functional state of the sternal part of the marrow organ and the normality of the organ as a whole. The statistically analyzed volumetric data presented here are sufficiently constant to justify the belief that the obtained volumes are normal, i. e. within the biologic variable error of chance, and represent a "standard of comparison" permitting evaluation of the volumetric pattern of the sternal marrow of women, children and the aged.

American J. Digestive Diseases, Fort Wayne, Ind.

11:271-304 (Sept.) 1944

Review of Role of Biliary System in Atrophic Arthritis. H. Gauss. —p. 271.
*Enzyme Treated Milk in Dietary Management of Patients with Peptic Ulcer. F. Steigmann and M. L. Blatt.—p. 276.
Influence of Phenolphthalein Ingestion on Red Blood Cell Resistance to Hemolysis. F. Steigmann and Josephine M. Dyniewicz.—p. 279.
Secretion and Excretion of Bile in Relation to Constipation. H. A. McGuigan.—p. 282.
Evaluation of Laxative Effect of Some Commonly Used Laxative Substances, with Particular Reference to Dosage. H. A. McGuigan, F. Steigmann and Josephine M. Dyniewicz.—p. 284.
Problems of Differential Diagnosis in Diseases of Gastrointestinal and Genitourinary Organs. E. Muehsam.—p. 290.
Role of Fat Soluble Vitamins A and D in Nutrition. J. Buckstein. —p. 292.
Long Standing Fever Due to Regional Ileocolitis. P. H. Sprague, W. S. Anderson and T. H. Aaron.—p. 295.

Enzyme Treated Milk in Peptic Ulcer.—According to Steigmann and Blatt, milk fulfils the requirements of an ideal food for the ulcer patient. In many instances, however, ordinary pasteurized milk is not well tolerated, and modified milks must be substituted. A recently introduced enzyme treated milk possesses the same nutritive value and mineral content as ordinary pasteurized milk; it has the advantage that it causes a higher combined and a lower free acidity and that softer, smaller and more friable curds result from its ingestion. The friable curds of this milk are expelled more easily from the stomach than the tougher curds of ordinary milk. Enzyme treated milk is well tolerated by some patients who have an intolerance to ordinary milk. Because of its chemical and physical properties, enzyme treated milk appears superior to ordinary milk in the dietary regimen of peptic ulcer patients.

American Journal of Medical Sciences, Philadelphia

208:281-420 (Sept.) 1944

Studies on Mechanism of Hypotensive Effect of Substances Eliciting Leukocytosis and Fever. R. D. Taylor and I. H. Page.—p. 281.
Further Studies on Leukocytosis Promoting Factor and on Necrosin in Inflammatory Exudates. V. Menkin.—p. 290.
Studies on Palmar Sweating. J. J. Silverman and V. E. Powell.—p. 297.
Value and Limitations of Congo Red Test for Amyloidosis. Marguerite G. Stemmerman and O. Auerbach.—p. 305.
*Creatinuria in Hyperthyroidism and in Essential Hypertension. J. V. Treusch, E. J. Kepler, Marschelle H. Power and S. F. Haines.—p. 310.
Effect of Calcium Pantothenate and Para-Aminobenzoic Acid on Gray Hair in Man: Study on Group of Young and Older Individuals. H. Brandaleone, Elizabeth Main and J. Murray Steele.—p. 315.
*Time-Activity Curves of Globin Insulin with Clinical Applications. Helen Eastman Martin, D. G. Simonsen and Noradeane H. Homann. —p. 321.
Eosinophil Leukemia, with Report of Case. M. Friedman, I. J. Wolman and H. H. Tyner.—p. 333.
Plasma Lipids in Patients with Rheumatoid Arthritis Receiving Gold Salt Therapy and During Pregnancy. T. B. Bayles and Charlotte B. Riddell.—p. 343.
Sicklemia in Black Carib Indian. T. H. McGavack and W. McKee German.—p. 350.
Arteriosclerotic and Hypertensive Heart Disease with Right Axis Deviation. A. H. Traum.—p. 355.
Influence of Pituitrin and Epinephrine on Action of Insulin on Blood Sugar. M. Wishnofsky, A. P. Kane and C. S. Byron.—p. 361.
Effects of Acetyl-Beta-Methylcholine in Human Subjects with Localized Lesions of Central Nervous System. S. M. Fisher and G. W. Stavraky.—p. 371.
Spontaneous Splenic Rupture in Infectious Mononucleosis: Case and Pathologic Report. W. Darley, W. C. Black, C. Smith and F. A. Good.—p. 381.

Creatinuria in Hyperthyroidism and Hypertension.—The studies reported by Treusch and his collaborators were undertaken for a double purpose: (1) to reevaluate creatinuria as a sign of hyperthyroidism, especially as it may help in ruling in or out hyperthyroidism in cases of hypertension with elevated basal metabolic rates, and (2) to ascertain whether any difference occurs in these two groups of cases, which, even if not helpful in clinical differentiation, might serve as supportive evidence to that already accumulated, that the elevated basal metabolic rate in some cases of hypertension is on a different basis from that in hyperthyroidism. The cases studied included 29 cases of exophthalmic goiter before compound solution of iodine had been given, 10 cases of adenomatous goiter with hyperthyroidism, 6 cases of adenomatous goiter without hyperthyroidism and 35 cases of essential hypertension, in 18 of which the basal metabolic rate was elevated to + 15 per cent or more. The majority of patients who had hyperthyroidism excreted more than 135 mg. of creatine in twenty-four hours, whereas the majority of patients who had essential hypertension even with an elevated basal metabolism excreted less than 90 mg. of creatine in twenty-four hours. The wide scattering of the results limited the value of spontaneous creatinuria as a clinical sign for ruling hyperthyroidism in or out in cases of essential hypertension with elevated basal metabolism. The results in general tended to substantiate the opinion that the elevated basal metabolism in essential hypertension rested on a different physiologic basis than that in hyperthyroidism.

Time-Activity Curves with Globin Insulin.—Eastman Martin and her associates point out that in the study of a new insulin preparation it is important to determine the total duration of action and the activity per hour. The time-activity curve has proved a useful method for such study. After the injection of the dose of insulin to be studied, glucose is given by mouth at variable intervals in the amount required to keep the blood sugar within the physiologic range (80 to 120 mg. per hundred cubic centimeters) as determined by repeated blood sugar determinations. The authors made studies with globin insulin on 36 patients. Eight time activity curves with doses of from 10 to 80 units showed that the duration varied with the dose and the severity of the diabetes but in general was fourteen to more than twenty-four hours, the average being eighteen to nineteen hours. The peak of activity occurred between the sixth and tenth hours. Onset of activity started within one hour of injection but was slow for the first three to five hours. Comparison of the time-activity function of the same dose of regular, protamine zinc and globin insulin in 2 patients showed that globin insulin was intermediary between regular and protamine zinc insulins as to duration and total carbohydrate handling ability. Studies with diet were made on 14 patients. The blood sugar curves with diet indicated the necessity for a light breakfast, midafternoon feeding and in some instances a bedtime feeding. Progress records of 16 outpatients receiving 10 to 80 units revealed that the majority of these patients were in fair to good control except for occasional upsets. On the basis of the reported studies the authors stress that globin insulin is of advantage (1) for patients controlled with protamine zinc insulin who had severe nocturnal reactions and (2) for patients controlled on a combined dose of regular and protamine zinc insulin before breakfast injected singly or combined. Other advantages are that it has more carbohydrate handling ability than protamine with an earlier peak of action and that it is a clear solution which obviates mixing. Its disadvantages are (1) a too low carbohydrate handling capacity to cover the diet of most patients with severe diabetes, that is, those requiring over 50 units, (2) too short a duration of effect to cover nocturnal insulin requirement of patients with severe diabetes and (3) burning on injection in some patients.

American Journal of Ophthalmology, Cincinnati

27:933-1062 (Sept.) 1944

Choline Esters with Mydriatic and Cycloplegic Action. K. C. Swan and N. G. White.—p. 933.
Quantitative Tests for Measuring Degree of Red-Green Color Deficiency. Louise L. Sloan.—p. 941.
Dissociation of Form Vision and Light Perception in Strabismic Amblyopia. G. Wald and H. M. Burian.—p. 950.
History and Development of Iris Inclusion Operations. T. D. Allen —p. 964.
Clinical Application of Screen (Cover) Test Described in Detail. J. W. White.—p. 977.
Phenomenon Associated with Eccentric Fixation: Case Report. G. Guibor.—p. 986.
"Biastigmatism": Evaluation and Criticism of Refractive Technic Advocated by Márquez. A. Linksz and W. Triller.—p. 992.
Endocrine Treatment of Keratoconjunctivitis Sicca. J. J. Fried and M. A. Goldzieher.—p. 1003.
Seeing Defects in Nonreaders. Myrtle Mann Gillett.—p. 1007.

Annals of Surgery, Philadelphia

120: 129-256 (Aug.) 1944

Continuous Spinal Anesthesia: Observations on 2,000 Cases. W. T. Lemmon and H. G. Hager Jr.—p. 129.
Continuous Spinal Anesthesia for Labor and Delivery: Preliminary Report. M. C. Hinebaugh Jr. and W. R. Lang.—p. 143.
*Use of Thiouracil in Preparation of Patients with Hyperthyroidism for Thyroidectomy. F. D. Moore, D. N. Sweeny Jr., O. Cope, R. W. Rawson and J. H. Means.—p. 152.
Subtotal Gastrectomy for Duodenal Ulcer. R. Colp, P. Klingenstein, S. Mage and L. J. Druckerman.—p. 170.
Hemostasis with Absorbable Gauze (Oxidized Cellulose). Virginia Kneeland Frantz, H. T. Clarke and R. Lattes.—p. 181.
Leiomyoma of Jejunum: Intermittent Melena of Fourteen Years' Duration and Fatal Hemorrhage. H. A. Hanno and M. Mensh.—p. 199.
Retrograde Jejunogastric Intussusception Through Subtotal Gastrectomy Stoma. W. L. McNamara.—p. 207.
Influence of Ether, Morphine and Nembutal on Mortality in Experimental Burns. R. Elman, with technical assistance of H. Riedal.—p. 211.
Closure of Defects of Lips with Composite Vermilion Border Lined Flaps. H. May.—p. 214.
Dupuytren's Contracture: Fibroma of Palmar Fascia. R. C. Clay. —p. 224.
Omental Circulation in Morphinized Dogs Subjected to Graded Hemorrhage. B. W. Zweifach, R. E. Lee, C. Hyman and R. Chambers.—p. 232.
Condylomata Acuminata: 200 Cases Treated with Podophyllin. O. S. Culp and I. W. Kaplan.—p. 251.

Thiouracil in Preparation for Thyroidectomy.—Moore and his collaborators report that 26 thyrotoxic patients were prepared for operation by thiouracil. They believe that thiouracil is superior to iodine as a preparation for thyroidectomy because it will bring the metabolic rate to normal regardless of the degree of elevation. The histologic change accompanying the lowering of the basal metabolic rate is an intensification of the hyperplasia seen in thyrotoxicosis. Thiouracil produces a hyperplastic but nonfunctioning goiter. An occasional disadvantage of thiouracil is the fact that this hyperplasia is accompanied by an increased vascularity and friability which makes the gland more difficult to handle and renders hemostasis arduous. The increased vascularity is especially troublesome if the patient has had a previous thyroidectomy. Preliminary or concomitant iodine administration delays the thiouracil response; it is possible but not yet proved that iodine therapy subsequent to thiouracil treatment may play a useful role in

reducing hyperplasia and vascularity. Toxicity not unlike that of the sulfonamides may be expected to occur when treating patients with thiouracil. While an improvement over iodine as a means of preparing patients for surgery, the drug is not ideal because it increases the histologic abnormality of the disease, because it affects only the production of hormone and not the underlying cause of hyperthyroidism, because surgery may be rendered more difficult by it and because disturbing evidences of toxicity may become manifest.

Archives of Pathology, Chicago

38:63-122 (Aug.) 1944

Structural Changes Following Administration of Quinacrine Hydrochloride. H. Siegel and C. W. Mushett.—p. 63.
Absorption of Vitamin A in Rat. H. Popper and B. W. Volk.—p. 71.
Formation of Hemosiderin in Lungs: Experimental Study. G. Strassmann.—p. 76.
Secondary Carcinoma of Esophagus as Cause of Dysphagia. W. E. Toreson.—p. 82.
Nephrotoxic Effect of Poisons Active on Convoluted Tubules in Presence of Hydronephrosis of One Kidney: Poisons Studies; Uranium Nitrate, Mercury Bichloride, Racemic Tartaric Acid and Diethylene Glycol. H. A. Wilmer.—p. 85.
Factors Influencing Persistence of Vitamin A Fluorescence in Tissue Sections. B. W. Volk and H. Popper.—p. 90.
Experimental Studies on Therapy and Prevention of Degenerative Vascular Diseases: I. Effect of Medication with Potassium Thiocyanate on Experimental Cholesterol Atheromatosis. W. C. Hueper.—p. 93.
Correlation of Alterations in Mammary Glands, Pituitary Body and Ovaries of Parabiotic Rats. I. T. Zeckwer.—p. 99.

Bulletin New York Academy of Medicine, New York

20:471-514 (Sept.) 1944

Recent Advances in Knowledge Relating to Formation, Recognition and Treatment of Kidney Calculi. A. Randall.—p. 473.
Experience with Electric Convulsive Therapy in Various Types of Psychiatric Patients. L. B. Kalinowsky.—p. 485.
Problem of Specialization in Medical Services of Regular Army and Navy Prior to Present Emergency. L. S. Kubie.—p. 495.
*Importance of Rh Factor in Mental Deficiency: Preliminary Report. H. Yannet.—p. 512.

Rh Factor and Mental Deficiency.—Yannet discovered the pathologic condition known as kernicterus in the brain of infants who had died of icterus gravis. It was observed that children who had recovered from icterus gravis subsequently exhibited evidence of central nervous system injury, including severe mental deficiency, extrapyramidal spasticity and athetosis. Necropsy on one of these children confirmed the relationship of the cerebral changes originally described as kernicterus and the aforementioned clinical picture. Since Rh isoimmunization is important in the etiology of erythroblastosis fetalis, and since kernicterus is found primarily in children with erythroblastosis, it would appear that the pathogenesis of the cerebral changes in this condition was in some way related to the Rh factor. The author suggests that there exists the possibility that certain of the imbecile and idiot defectives now classified as undifferentiated may be etiologically explained as probable results of Rh isoimmunization. The incidence of Rh negative mothers of an unselected group of undifferentiated mental defectives was found to be approximately 25 per cent. Among an equal number of mothers of mongolian, diplegic and microcephalic children and others of the sort the incidence of Rh negative blood was in the normally expected range of about 12 per cent. While the total number examined to date (approximately 100) is not enough from which to draw definite conclusions, the results are of sufficient interest to warrant further study.

Gastroenterology, Baltimore

3:73-140 (Aug.) 1944

Presidential Address: Postwar Rehabilitation of Digestive Tract. Sara M. Jordan.—p. 73.
Infective Hepatitis: II. Clinical Study of Patients with Hepatitis Not Related to Yellow Fever Vaccination or Infectious Jaundice (Weil's Disease). Z. T. Bercovitz and H. R. Knoch.—p. 79.
Esophagus: Review of Literature 1942 and 1943. E. B. Benedict—p. 90.
Giardiasis with Unusual Findings. P. B. Welch.—p. 98.
Visualization of Rubber Tip of Gastroscope: Differentiation from Gastric Ulcer. F. R. Whitehouse and J. M. MacMillan.—p. 103.
Studies on Ulcerative Colitis and on Some Biologic Effects of Detergents. S. A. Portis, C. L. Block and H. Nicheles.—p. 106.
Intestinointestinal Inhibitory Reflex. W. B. Youmans.—p. 114.

Iowa State Medical Society Journal, Des Moines

34: 341-386 (Aug.) 1944

Postwar Planning. W. H. Judd.—p. 341.
Comments on Rheumatic Heart Disease. Y. W. Swanson.—p. 351.
Dermatofibromyxosarcoma. E. D. McClean and P. F. H. Pugh.—p. 352.
Pneumoradiography of Knee Joint. F. Blonck and J. Wolf.—p. 354.

34: 387-424 (Sept.) 1944

Developments in Military Neuropsychiatry. M. J. Farrell.—p. 387.
Primary Atypical Pneumonia: Report of 47 Cases. D. W. Chapman.—p. 391.
Roentgen Aspect of Atypical or Virus Pneumonia. R. W. Bernhard.—p. 395.

Journal of Experimental Medicine, New York

80:77-164 (Aug.) 1944

Peritoneal Absorption: Red Cells Labeled by Radio Iron Hemoglobin Move Promptly from Peritoneal Cavity into Circulation. P. F. Hahn, L. L. Miller, Frieda S. Robscheit-Robbins, W. F. Bale and G. H. Whipple.—p. 77.
Sedimentable Component of Allantoic Fluid and Its Relationship to Influenza Viruses. C. A. Knight.—p. 83.
Initiating and Promoting Elements in Tumor Production: Analysis of Effects of Tar, Benzpyrene and Methylcholanthrene on Rabbit Skin. W. F. Friedewald and P. Rous.—p. 101.
Determining Influence of Tar, Benzpyrene and Methylcholanthrene on Character of Benign Tumors Induced Therewith in Rabbit Skin. W. F. Friedewald and P. Rous.—p. 127.
Gelatin—Its Usefulness and Toxicity: Blood Protein Production Impaired by Continued Gelatin by Vein. Frieda S. Robscheit-Robbins, L. L. Miller and G. H. Whipple.—p. 145.

80:165-256 (Sept.) 1944

*Experimental Transmission of Colorado Tick Fever. L. Florio, Mabel O. Stewart and E. R. Mugrage.—p. 165.
Hematologic Findings in Golden Hamster (Cricetus Auratus). Mabel O. Stewart, L. Florio and E. R. Mugrage.—p. 189.
Induced Resistance of Central Nervous System to Experimental Infection with Equine Encephalomyelitis Virus: III. Abortive Infection with Western Virus and Subsequent Interference with Action of Heterologous Viruses. R. W. Schlesinger, P. K. Olitsky and Isabel M. Morgan.—p. 197.
Relationship of New Growth Factor Required by Certain Hemolytic Streptococci to Growth Phenomena in Other Bacteria. H. Sprince and D. W. Woolley.—p. 213.
Influence of Diet on Production of Tumors of Liver by Butter Yellow. E. L. Opie.—p. 219.
Pathogenesis of Tumors of Liver Produced by Butter Yellow. E. L. Opie.—p. 231.
Specificity in Effects on Brain Metabolism of Two Differing Neurotropic Viruses. Margaret Nickle and H. Kabat.—p. 247.

Experimental Transmission of Colorado Tick Fever.—According to Florio and his associates a number of unknown fevers were encountered in the Rocky Mountain region beginning about 1850, when this part of the country was first being explored and settled. Late in the nineteenth century Rocky Mountain spotted fever emerged from this welter of confusing fevers as a distinct clinical entity. Many physicians soon came to recognize a mild, nonexanthemic disease of short duration which they called tick fever, mountain fever and mountain tick fever. Becker in 1930 first recognized the condition as a separate clinical entity and gave it the name Colorado tick fever. The name is misleading, since it is known to occur in the same Western area as Rocky Mountain spotted fever. Colorado tick fever is a mild, nonfatal infection of unknown etiology closely resembling dengue fever except for the absence of a skin eruption. The evidence for transmission of Colorado tick fever by the wood tick Dermacentor andersoni is circumstantial. Since several investigators were unsuccessful in transmitting the disease to the common laboratory animals, the authors tried transmission experiments with human volunteers, also vector experiments with Dermacentor andersoni and transmission to the golden hamster. The symptoms, history of tick bite, characteristic fever curve and white blood cell picture should make possible diagnosis of Colorado tick fever in nearly every case. The typical white blood cell picture is a depression of the total leukocytes, with a shift to the left of the granulocytes. Basophilic cytoplasmic bodies appear occasionally in lymphocytes three to four days after clinical recovery. The disease can be transmitted serially in human beings by parenteral injection of blood or serum. Such transfers have not resulted in decreased or increased virulence. The naturally acquired and experimental cases are identical in their manifestations. An attack of Colo-

rado tick fever confers a degree of immunity to the disease. It is not a mild form of Rocky Mountain spotted fever, since individuals immunized with ground tick vaccine against Rocky Mountain spotted fever are still susceptible to Colorado tick fever. Adult Dermacentor andersoni ticks allowed to feed on typical cases and then carried through a new generation and fed on susceptible adults failed to transmit the disease. Colorado tick fever has been successfully transmitted to the golden hamster.

Journal of Nat. Cancer Inst., Washington, D. C.

5:1-76 (Aug.) 1944. **Partial Index**

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Relationship of Amyloid Infiltration and Renal Disease in Mice. Thelma B. Dunn.—p. 17.
Esterase (Butyric Esterase) Activity of Normal and Neoplastic Tissues of Mouse. J. P. Greenstein.—p. 31.
Comparative Oxidase Activity of Melanotic and Amelanotic Melanomas. J. P. Greenstein and G. H. Algire.—p. 35.
Note on Cystine Oxidase Activity in Normal and Neoplastic Tissues of Mouse. J. P. Greenstein and Florence M. Leuthardt.—p. 39.
Effect of Low Lysine Diet on Mammary Tumor Formation in Strain C3H Mice. Florence R. White and J. White.—p. 41.
Chemical Studies on Human Cancer: I. Cytochrome Oxidase, Cytochrome C and Copper in Normal and Neoplastic Tissues. J. P. Greenstein, J. Werne, A. B. Eschenbrenner and Florence M. Leuthardt.—p. 55.

Journal of Urology, Baltimore

52:99-176 (Aug.) 1944

Nephrolithotomy for Recurrent Branching Calculi. H. Bugbee.—p. 99.
Case Report Illustrating Brief Period of Time Necessary to Formation of Large Staghorn Renal Calculus. A. de la Peña and E. de la Peña.—p. 108.
Renal Malignancy and Prostatic Patient. M. R. Keen.—p. 109.
Aneurysm of Abdominal Aorta Associated with Urinary Symptoms. J. A. Lazarus and M. S. Marks.—p. 115.
Supernumerary Ureter with Extravesical Orifice: Report of 4 Cases. W. W. Scott.—p. 126.
Extensive Glandular Proliferation of Urinary Bladder Resembling Malignant Neoplasm. E. C. Lowry, F. C. Hamm and D. E. Beard.—p. 113.
Effect of Testosterone Propionate on Tonus of Urinary Bladder. S. R. Muellner and J. B. Hamilton.—p. 139.
Actinomycosis of Urinary Bladder Complicating a Case of Madura Foot. W. E. Hatch and A. H. Wells.—p. 149.
Amyloidosis of Urinary Bladder. R. W. Corbitt, A. C. Broders and T. L. Pool.—p. 153.
Analysis of Prostatic Operations Reported by Candidates for Membership in American Urological Association. W. T. Briggs.—p. 158.
Traumatic Avulsion of Skin of Penis and Scrotum. R. B. Roth and K. W. Warren.—p. 162.
Unusual Tumors and Secondary Carcinomas of Penis: Review of Literature and Report of Case. C. A. Wattenberg.—p. 169.

Military Surgeon, Washington, D. C.

95:179-256 (Sept.) 1944

Advance of Medical Science in War. C. H. Best.—p. 179.
Jungle and Desert Emergencies. J. L. Moore.—p. 183.
Determination of Alcoholic Intoxication in Military Personnel. A. G. Hulett.—p. 191.
How to Obtain Good Results with Brachial Plexus Block Anesthesia. R. B. Phillips.—p. 197.
Fractured Carpal Scaphoid in Industry and in Military Service. M. G. Henry.—p. 199.
Rehabilitation Problems. L. J. Numainville and E. Kohn.—p. 205.
Studies on Tablets for Individual Disinfection of Small Water Supplies for Field Use by Troops. H. B. Webb.—p. 209.
*Parietal Pain in Lower Right Abdominal Wall. J. R. Shepler and C. L. Young.—p. 216.
Horner's Syndrome Associated with Goiter: Case Report. C. C. Blackwell.—p. 219.
Diagnostic Tests for Atopic Sensitivity. W. M. Edwards.—p. 222.
Observations in Obstetrics in Army Air Force. I. Siegel.—p. 225.
Splint for Treatment of Fractured Fingers Requiring Traction. G. M. Saypol.—p. 226.
Diagnosis of Minor Back Disabilities. R. V. Fuldner.—p. 228.
Use of Saturated Iodoform-Benzoin Solution to Counteract Odor of Plaster Encased War Wounds. C. M. Silver and H. W. Rusbridge.—p. 233.
Care of Dental Angle Handpieces. W. L. Hammersley.—p. 234.
Sand Sterilization Method for Loeffler's Serum Slants, Egg Media for Mycobacterium Tuberculosis and Protozoa. J. H. Alli.—p. 235.

Parietal Pain in Lower Right Abdominal Wall.—Shepler and Young define parietal pain as hypersensitivity of the skin, fascia, muscle, or parietal peritoneum of a sufficient degree to cause pain or tenderness. The etiology of parietal neuralgia is basically the same as that of neuralgia of other nerves. Mechanical conditions may act as predisposing factors for acute exacerbations. Carnett, Bates and Golwart point out that some form of spinal abnormality causing inflammation or pressure on the spinal nerve root is the most common cause of parietal neuralgia. Structural changes such as scoliosis, lordosis, injuries, diseases and tumors may be considered as possible causes. A high percentage of patients complaining of parietal pain show scoliosis. The scoliosis is frequently accounted for by the fact that the pelvis is not level. Often this can be corrected by simple elevation of the sole and heel of the shoe on the low side. This alone or with exercise of the back muscles will frequently cause improvement. The acute neuralgias are usually secondary to some type of acute upper respiratory infection. Acute infection or endocrine disturbances may be causative factors as well as various toxemias. This is true in a certain percentage of all neuralgias. Pain in the abdominal wall should be considered in the differential diagnosis of visceral disease, especially in the diagnosis of appendicitis.

New Jersey Medical Society Journal, Trenton

41:329-360 (Sept.) 1944

Eye Injuries in Industry and Determination of Their Disability. A. R. Sherman.—p. 332.
*Thiouracil Medication in Hyperthyroidism, Hypertension and Neuroses. E. A. Cannon.—p. 339.
Report of 17 Cases of Posterior Bone Block for Dropfoot Seen and Treated at New Jersey Orthopaedic Hospital, Orange, N. J. from 1933 to 1943. P. C. Wiesenfeld.—p. 344.
Secondary Postoperative Megacolon After Multiple Resections of Large Intestine. A. O. Wilensky.—p. 351.

Thicuracil Medication in Hyperthyroidism, Hypertension and Neuroses.—Cannon found that 2 cases of hyperthyroidism unassociated with serious arteriosclerosis showed noticeable improvement and disappearance of all symptoms of hyperthyroidism on thiouracil. Another patient had toxic diffuse goiter of many years' duration and severe arteriosclerotic heart disease with hypertension. As regards the thyroid condition and the blood pressure, this patient showed great improvement. Two patients with hysteria, hypertension and increased metabolism regained normal basal metabolic rates under thiouracil treatment, and there was subjective nervous improvement but no change in blood pressure. One longstanding severe case of hypertension with hysteria showed moderate blood pressure and nervous improvement under thiouracil medication. One patient with moderate hypertension and hysteria of short duration showed good subjective nervous improvement with good blood pressure reduction. Four patients with severe hypertension and arteriosclerosis showed no change in blood pressure under thiouracil medication.

Pennsylvania Medical Journal, Harrisburg

47:1057-1184 (Aug.) 1944

Investigation of Transfusion Reactions. O. E. Turner.—p. 1071.
Thiocyanate Therapy in Hypertension. T. M. Durant.—p. 1077.
Role of Gynecologic Lesions in Ureteral Obstruction. J. B. Montgomery.—p. 1080.
Management of Allergic Dermatoses. L. H. Criep.—p. 1084.
Ainhum, with Report of Case from Pennsylvania. W. O. Goehring.—p. 1089.

47:1185-1312 (Sept.) 1944

*Conservative Management of Acute Pancreatitis. T. A. Shallow, S. A. Eger and F. B. Wagner Jr.—p. 1199.
*Masked Hypoglycemia. W. W. Dyer.—p. 1210.
Prostatic Carcinoma: Endocrine, Roentgenologic and Surgical Treatment. H. K. Sangree.—p. 1213.
Glaucoma: Early Signs and Symptoms. G. A. Hunt.—p. 1216.

Conservative Management of Acute Pancreatitis.—Shallow and his collaborators report 12 cases collected over a two year period (1941-1943) of middle and late life. Recent trends have been more and more toward conservative therapy, especially during the very acute phase of the disease. In the rare fulminating type the mortality is high regardless of therapy, and surgical intervention in these cases may only contribute further to the circulatory shock already present. Such cases should be treated by supportive measures such as Wangensteen suction, fluids parenterally, plasma, blood, oxygen and in selected cases chemotherapy. If surgery is still necessary, it should then be performed during the less severe phase of the disease.

In pancreatic edema the acute phase usually subsides after several hours of supportive measures. In the edematous type only medical treatment should be instituted and elective surgery on the biliary tract performed at a later date if subsequent studies reveal an underlying pathologic condition in this system.

Masked Hypoglycemia.—Dyer thinks that there are probably many cases of spontaneous hypoglycemia masquerading as epilepsy, psychoneurosis, neurasthenia, menopausal neurosis and the like. The symptomatology is varied and often bizarre. Patients mildly affected may simply have a feeling of weakness, slight dizziness, perhaps a sense of hunger or some excessive perspiration. Patients more severely affected will often complain of diplopia, headache, occasionally nausea, extreme weakness, ataxia and loss of mental equilibrium. Severely affected patients suddenly become unconscious, have convulsions, break out into cold, clammy perspiration and are revived best by the use of glucose intravenously. The diagnosis in these cases can be established by a sugar tolerance test if care is taken to insist on a normal diet preceding the tolerance test and a five hour examination rather than the conventional three hour test. Important factors in the evaluation of spontaneous hypoglycemia are (1) the level of blood sugar at the time of the reaction, (2) the rapidity of fall of the blood sugar and (3) the previous level of blood sugar. It is just as possible to have hypoglycemic reactions when, in the course of one to three hours, the blood sugar is brought from a level of 300 to 100 as when the blood sugar is brought from a level of 150 to 50. In addition to the sugar tolerance test, the patient must be given a complete medical examination. Many of these patients respond to a low carbohydrate, moderately high fat and high protein diet divided into the three usual meals with interval and bedtime feedings. In the presence of other complicating disease this treatment should be carried out in conjunction with recognized forms of therapy for the attendant disease. One of the author's patients had hypothyroidism and in addition to the prescribed diet was given thyroid. Failure to respond to the dietetic treatment calls for further diagnostic study.

Rhode Island Medical Journal, Providence

27:373-440 (Aug.) 1944

Contribution of Psychiatry to Democratic Morale. E. A. Strecker.—p. 383.
Psychiatric Problems in Wake of War. G. Zilboorg.—p. 385.
War Against Fear and Hate. K. A. Menninger.—p. 387.
Future of Voluntary Hospital. A. Gregg.—p. 389.

27:441-500 (Sept.) 1944

Virus Infections. P. C. Cook.—p. 449.
*Sick Headaches. W. C. Alvarez.—p. 451.
Anesthesia in Tropics. E. Damarjian.—p. 453.

Sick Headaches.—According to Alvarez, migraine causes much disability and suffering but is little understood, poorly diagnosed and poorly treated. These women go to the gastroenterologist because they are nauseated or vomit. Because they vomit bile they think the liver must be affected, but it isn't. There is rarely anything organically wrong with the digestive tract, and what the woman needs is not a diet or an operation but rather information on how to live so calmly that her brain will not get so on edge that the little explosion will take place. The cause of migraine is a hereditary peculiarity of the brain. The stomach is upset secondarily, just as in the case of seasickness or in Ménière's syndrome. It is essential that the physician recognize the peculiar temperament because it is helpful in making the diagnosis. These women are tense and quick. They like to get things done fast and done just so. They are perfectionists. Most are hypersensitive to sounds and lights and smells. They fatigue and wilt quickly under any strain or excitement. In the worst and most prostrating cases there is often a combination of migrainous inheritance derived from one ancestor, with a psychopathic inheritance derived from another. The typical attack of migraine begins with a scintillating scotoma which is present for about twenty minutes. This is followed by a throbbing, unilateral, usually frontal headache, with nausea, utter misery and perhaps vomiting. This attack may last for from hours to several days. There are many atypical forms of the disease. The scintillating scotoma is usually lacking. The headache may be on both sides of the head, it may be nuchal or it may be so mild that the patient does not complain about it. Similarly there may be but little nausea and no vomiting. There may be only abdominal pain with vomiting. In these cases of atypical migraine the essential thing is to recognize a typically migrainous person who falls ill in a typically migrainous way after getting tense or tired or nervously upset. The best way in which to avoid migraine is to live quietly and peacefully and sanely. To relieve attacks the best drug is ergotamine tartrate, or gynergen. It should be given intramuscularly—not orally or intravenously. The best time in which to abort an attack is when it starts. After nausea sets in medicines are not well absorbed from the stomach. They can then be given by rectum.

Southern Medical Journal, Birmingham, Ala.

37: 471-532 (Sept.) 1944

George Colmer and Epidemiology of Poliomyelitis. A. E. Casey and Eleanor H. Hidden.—p. 471.
*Sarcoidosis: Report of Case. J. A. Boone and R. R. Coleman.—p. 477.
Fractures of Femur in Children. W. P. Blount, A. A. Schaefer and G. W. Fox.—p. 481.
Potential Danger of Topical Use of Sulfathiazole: Report of 16 Cases of Sensitization to Sulfathiazole. F. A. Ellis.—p. 493.
Penicillin in Surgery. W. A. Altemeier.—p. 494.
Gastroenterology in Large Naval Hospital. W. T. Gibb.—p. 507.
*Use of Diethylstilbestrol to Control Uterine Bleeding. K. J. Karnaky.—p. 510.
Modification of Gellhorn Pessary: To Allow Closer Approach to Normal Vaginal Physiology. L. C. Blair.—p. 523.
Puerperal Sepsis Treated with Penicillin: Case Report. R. A. White.—p. 524.
Meningococcic Meningitis: Death Following Withdrawal of Spinal Fluid. R. Buxton.—p. 525.

Sarcoidosis.—Boone and Coleman report the case of a Negro, aged 40, whose symptom complex resembled the lupus pernio of Besnier. Aside from the typical lesions of nose, ears, fingers, toes and lymph nodes this patient showed two other features of sarcoidosis: elevated plasma protein and eosinophilia. In view of the tuberculous etiology that has been suspected by some authors, the extensive exposure of this patient to an active case of tuberculosis is intriguing. It seems almost impossible that any one who had such intimate and prolonged exposure could have a negative tuberculin reaction, but this patient did, and extensive search of the lesions for tubercle bacilli was completely fruitless. Particular attention is called to the painless, rubbery, spindle shaped swellings of the finger bones. These occur in few other diseases, especially as multiple lesions.

Use of Diethylstilbestrol to Control Uterine Bleeding.—Karnaky and his co-workers state that the drug may be administered directly into the anterior wall of the cervix to arrest severe uterine bleeding. For dysfunctional uterine bleeding, 5 mg. of diethylstilbestrol is given at 9 o'clock every night for thirty nights. If bleeding starts during the time the patient is taking 5 mg. every night she is to take 5 mg. every fifteen minutes until the bleeding stops, but she is to continue the night tablet. The authors think that there are too many hysterectomies being done because of dysfunctional uterine bleeding with or without myomas. Since they have used diethylstilbestrol, uterine bleeding has been a rare indication with them for hysterectomy. Diethylstilbestrol is a nontoxic drug. It can be safely given in large doses for three to six months. Its use obviates the need for many hospital curettements in women or girls below the carcinoma age. Diethylstilbestrol is to uterine bleeding what the sulfonamide drugs are to infections.

Texas State Journal of Medicine, Fort Worth

40:217-268 (Aug.) 1944

Intensive Arsenotherapy of Early Syphilis. A. G. Schoch and L. J. Alexander.—p. 224.
Clinical Use of Penicillin: Report of 115 Cases Treated in Army Hospital. C. F. Wollgast.—p. 225.
Successful Treatment of Diabetes. A. Marble.—p. 231.
Evaluation of Eye Tests Used in Examination of Army Aviators. V. A. Byrnes.—p. 235.
Newer Knowledge of Viruses and Virus Diseases. S. E. Sulkin.—p. 240.
Control of Food Poisoning. P. L. Wermer.—p. 249.
Rapid Treatment Center Program of Texas. M. S. Dickerson and C. M. Sidell.—p. 251.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

56:151-194 (July-Aug.) 1944

Reticular Tissue and Skin. A. H. T. Robb-Smith.—p. 151.
*Contact Dermatitis in a Morphine Factory. S. E. Dore and E. W. P. Thomas.—p. 177
*Occurrence of "Morphia Rash" in Manufacture of Morphine Salts from Opium. G. C. Green.—p. 182.

Contact Dermatitis in a Morphine Factory.—Dore and Thomas report 9 cases of dermatitis which occurred in a morphine factory near London between December 1941 and March 1943. There were 7 men out of a total of 16 men employed and 2 women (all of the women employed). The average period between commencing employment and the first symptoms was fourteen and one-half weeks. In the evaporation, crystallization and purification of Gregory salt 1 case of dermatitis developed; in the separation of alkaloids and the purification of the separated morphine salt 3 cases developed, and in the drying, milling and packing of morphine salts 5 cases. The eruption began in practically all cases as an irritable erythematous dermatitis of the eyelids and surrounding area and was sometimes accompanied by quite severe local edema. The regions next oftenest affected were the nape of the neck and below the chin in women, and the collar area in men. The arms and hands tended to be involved later. In 1 man the scrotum became involved, and in another the dermatitis eventually generalized. Otherwise the eruption remained limited to the exposed parts (face, neck, arms and hands). Its clinical appearance varied considerably in different cases; on the face and neck it was generally diffuse and of typical contact type; on the hands it was sometimes cheiropompholyx-like. In 1 case it resembled erythema multiforme. Secondary infection occurred in several cases, and in 1 at least lichenification of the skin from scratching. It has not been possible to determine the specific sensitizer. The almost constant first appearance of the rash around the eyelids and the edematous and erythematous type of reaction there seem strong evidence in favor of the irritant being air borne, as fine dust or spray. In support of this would be the upper respiratory catarrh which was typical of most cases.

Morphia Rash and the Manufacture of Morphine Salts.—Green discusses the problem of morphia rash from the manufacturing standpoint. To satisfy the rigid checks required by the Dangerous Drugs Acts, and on account of the high cost of raw material, extreme precautions are taken to avoid loss through leakage and spilling during manufacture. For these reasons mechanical handling is avoided. The operatives are subjected to a higher degree of exposure to the material by contact than they might be in a more mechanized operation. At the factory with which the author is connected no detailed case records have been kept in the past, as the problem of the availability of labor for replacement has never been acute until the present war. Skin and respiratory troubles were ever present during the nineteenth century. It has always been the practice at this factory to place a man who has developed "rash" on workmen's compensation until recovery, when he is transferred elsewhere in the works where there are no dermatitis hazards. It has been found by trial and error during more than a century that immunity is not acquired. Some workers contract the disease very soon after introduction to the opiates process. Others may appear to be immune only to develop the rash after ten to thirty years of work. It is possible for the rash to occur in a mild form, and the worker may continue on the process without serious worsening of his condition, but the rash does not clear up. Risks are best controlled by insistence on personal cleanliness, clean workrooms, a clean habit of working and adequate ventilation. Great stress has been laid on a plentiful supply of water for washing. Rubber gloves were introduced wherever practicable in 1937, and protective cream has been provided since 1940. It cannot yet be claimed that there is evidence that the two latter precautions have reduced the incidence. The greatly increased incidence of industrial dermatitis since the war started has been placed on the absence of a "built-up" resistance in new employees.

British Journal of Ophthalmology, London

28:373-428 (Aug.) 1944

*Value of Penicillin in Treatment of Superficial Infections of Eyes and Lid Margins. T. Crawford and E. F. King.—p. 373.
Incidence of Eye Disease in Australian Imperial Forces, Middle East. J. B. Hamilton.—p. 383.
Ocular Neurosis. A. M. G. Campbell and A. G. Cross.—p. 394.
Operations in 100 Cases of Convergent Concomitant Squint. S. H. Faulkner, E. Scully and E. E. Carter.—p. 403.
Simplified External Dacryocystorhinostomy. J. L. D. Williams and B. G. Hill.—p. 407.
Case of Corpora Nigra with Anterior Synechia. R. Crawford.—p. 410.
Unilateral Membranous Conjunctivitis, with Complete Cast. J. F. Galpine and Dorothy R. Campbell.—p. 412.

Penicillin in Superficial Infections of Eyes and Lid Margins.—Crawford and King treated four groups of patients. The first group had severe conjunctivitis with injection and discharge but without secondary involvement of the cornea. The second group had additional secondary corneal infiltrations, either superficial and diffuse or marginal. The third group had conjunctivitis with a single large secondary corneal ulcer of infiltration. The clinical picture was here dominated by the localized corneal infection. The fourth group had blepharitis, chronic in type and severe in character. The sodium salt of penicillin was supplied in sterile tablets of 7,500 units each. From these tablets drops and an ointment were made which contained 250 units per gram. Drops were used in group 1, as in these cases the discharge tended to be profuse. In groups 2, 3 and 4 ointment was used. About one half of the patients complained of smarting pain for some ten to twenty minutes after instillation of the drops or ointment, but no case of damage to the corneal epithelium was noted. As a routine the penicillin was instilled for seven days after the bacteriologic cultures from the conjunctival sac had become negative. If by this time the eye had not made a full clinical recovery, the treatment was continued for a further seven days. Conjunctival swabs were examined before commencement of treatment, daily during treatment until repeated negative results were obtained, seven days after cessation of treatment and at various later dates. Twenty-eight cases were treated, and it was found that for superficial infections of the conjunctiva, cornea and lid margins penicillin far excels any therapeutic agent heretofore employed. It is highly effective in stubborn cases which prove resistant to the usual methods of treatment. From the bacteriologic point of view penicillin, as employed in this investigation, eradicates sensitive organisms from the conjunctiva in a few days. It cannot, however, prevent reinfection after the cessation of treatment, and there was no evidence that therapy with penicillin established immunity to recurrent infection. In the cases which showed bacteriologic relapse the organisms causing the relapse were as sensitive to penicillin as were those causing the original infection.

British Journal of Radiology, London

17:197-228 (July) 1944

Diverticulitis and Diverticulosis. N. P. Henderson.—p. 197.
Consideration of Dose Distributions in Treatment of Intrinsic Carcinoma of Larynx by Radium Implantation. J. Morton, L. H. Gray and G. J. Neary.—p. 204.
Tomography of Temporomandibular Joint and Ramus of Mandible. C. W. C. Gough.—p. 213.
German Radiotherapy in 1942-1943. H. C. Simchowitz.—p. 216.
Observations on Radioluceny as Significant Physical Property of Acrylic Dental Materials. G. L. Roberts.—p. 218.
Review of Scandinavian Literature on Gastrointestinal Diseases, 1939-1943. E. Samuel.—p. 221.

17:229-260 (Aug.) 1944

Team Work in Treatment of Cancer. H. S. Souttar.—p. 229.
Volume Localization of Deep-Seated Tumors by Means of Tomography. E. M. Ungar, G. Spiegler and D. W. Smithers.—p. 235.
Radiographic Abnormalities of Stomach and Colon in Mental Defectives. W. E. Snell.—p. 239.
Future of Radiology in Obstetrics. J. B. Hartley.—p. 241.
Some Observations on Dental Changes in Possible Riboflavin Deficiency. J. A. Ross.—p. 247.
Calculation of Dosage Rate in Rectangular Fields. F. Bush.—p. 248.
Radiologic Observations and Description of Cardiac Pouch in Carcinoma of Cardiac End of Stomach. A. Elkeles.—p. 251.
Further Notes on Structure and Function of Intervertebral Disk. G. Doel.—p. 255.
"Stress" Fracture of Bone. D. R. Bertram.—p. 257.
Precise Pelvimetry. W. H. Hastings.—p. 259.

Schweizerische medizinische Wochenschrift, Basel

73: 1245-1268 (Oct. 9) 1943. **Partial Index**

Foundations and Results of Immunization Against Diphtheria. A. Hottinger.—p. 1245.
Irradiation of Angiomas. G. Miescher.—p. 1247.
Serial Roentgen Examinations: Critical Remarks and Casuistic Contributions. H. H. Weber.—p. 1252.
Toxic Polyneuritis Caused by Allyl-Isopropyl-Acetyl Carbamide (Sedormid). H. Wespi.—p. 1257.

73: 1269-1292 (Oct. 16) 1943. **Partial Index**

The Basis for and the Results of Immunization Against Diphtheria. A. Hottinger.—p. 1269.
Reaction of Digital Arteries to Temperature and Vasodilators. L. Dalla Torre.—p. 1274.
*N-Dimethylacroyl Sulfanilamide in Pneumonia. A. Thurnherr.—p. 1277.
Alcohol as Disinfectant. G. Sobernheim.—p. 1280.

N-Dimethylacroyl Sulfanilamide in Pneumonia.—Thurnherr finds that the secondary effects of n-dimethylacroyl sulfanilamide are comparatively mild and harmless. He has used n-dimethylacroyl sulfanilamide in 66 cases, of which 15 were pneumonia. Mild forms of cyanosis were rather frequent, but they were not dependent on the dose. The only really serious secondary effect is the appearance of Heinz bodies, particularly if they appear in numbers of over 200 per thousand. Small numbers of Heinz bodies were detected in 68 per cent of the author's cases, but numbers in excess of 100 per thousand were never encountered. The author also observed repeatedly a decrease in the hemoglobin content, but it averaged only 4 per cent and never exceeded 15 per cent. A high blood concentration should be established as soon as possible. To effect this he administers the n-dimethylacroyl sulfanilamide during the first twenty-four hours intravenously, intramuscularly and by mouth. After that the dosage is continued by mouth. Medication must be continued for several days after the temperature has subsided.

Deutsche medizinische Wochenschrift, Leipzig

69: 193-216 (March 5) 1943. **Partial Index**

Dynamics of Heart. W. Weitz.—p. 193.
Case of So-Called Reticulosis. E. F. von Hueber and R. Velasco.—p. 199.
Undesirable and Unusually Intensified Untoward Reactions on Administration of Cobra Venom to Relieve Pains from Cancer. O. Gessner.—p. 203.
Experiences Gained from Administration of Agnus Castus Oligoplex for Producing Increase in Lactation. Margot Noack.—p. 204.
*Etiology of Spontaneous Hypoglycemia. J. Ufer.—p. 206.

Etiology of Spontaneous Hypoglycemia.—Ufer reports a case of severe spontaneous hypoglycemia. During the last few months prior to admission to the hospital the patient, a woman aged 19, had suffered from fatigability, while her weight increased by 15 pounds (7 Kg.). Menstruation had occurred regularly every twenty-eight to thirty days for the last two years. Within the first three days after admission the patient had three attacks of hypoglycemia with loss of consciousness. The blood sugar was reduced to 20 mg. per hundred cubic centimeters. She regained consciousness immediately after administration of 20 cc. of 40 per cent glucose. She was given small amounts of a diet rich in carbohydrates every two hours during the following days and nights. The attacks became less frequent, but the blood sugar values varied from 50 to 110 mg. per hundred cubic centimeters. Her condition was still unchanged six months after admission to the hospital. A gynecologic examination revealed an enlarged uterus of irregular, knotty consistency. Laparotomy disclosed a smooth tumor of the uterus the size of a fist. This was removed and was proved to be a myosarcoma. Following the operation the patient's general condition and the hypoglycemia were completely controlled. Repeated examinations for the next three and one-half years revealed normal blood sugar values. The increase in body weight and the relatively small size of the tumor opposed the concept that the tumor may have had a specific metabolism drawing enormous amounts of sugar from the blood. It is suggested that an increased hormonal activity of the tumor was responsible for the autoproduction of insulin or of an insulin-like substance which stimulated the secretion of the islands of Langerhans with resulting hypoglycemia. Observations of minor importance should be carefully investigated in cases of hypoglycemia with uncertain etiology, and tumors should be removed even in the presence of a severe hypoglycemia.

Psychiatrisch-Neurologische Wochenschrift, Halle

45: 137-148 (May 22) 1943

Report of 2 Cases of "Cerebral Infantile Paralysis," with Suggestion of New Term for This Syndrome. F. Lucksch.—p. 137.
*Methods for Combating Complications of Insulin Shock and Electric Shock Therapy. E. Bauer.—p. 140.
Treatment of Unconscious Psyche by Suggestion. J. Haupt.—p. 142.
Otto III: Psychiatric Study. W. H. Becker.—p. 143.

Combating Complications of Insulin Shock and Electric Shock Therapy.—Bauer states that complications of insulin shock treatment for psychoses are frequent, since shock may be protracted or prolonged and that in spite of repeated glucose feeding with the stomach tube. An alarming condition results because of the increased lability of the carbohydrate metabolism and the occurrence of bronchopneumonia or aspiration pneumonia favored by prolonged unconsciousness. The following treatment was effective: Blood sugar levels were determined within half an hour after the unsuccessful feeding with a stomach tube. Combined intravenous administration of glucose, of d-desoxyephedrine and of vitamins B_1 and C was practiced in cases with increased blood sugar levels. Cardiac stimulants are given when circulatory disturbances are predominant. Prophylactic treatment for prolonged insulin shock with d-desoxyephedrine and glucose feeding with a stomach tube was practiced with good results in cases in which a prolonged insulin shock was experienced in a previous course of insulin shock treatment. D-desoxyephedrine administration is not contraindicated in patients of advanced age, since the rise in blood pressure due to the drug is slow. Rapid awakening prevents lung complications. Respiration is improved and the blood sugar level is not affected. It is safe to use d-desoxyephedrine in cases in which the blood sugar level is lowered as well as in those with an increased blood sugar level. Oral administration of two tablets of d-desoxyephedrine previous to combined insulin shock and electric shock treatment prevented vomiting, headache, fatigue and weakness after the treatment. The same good results were obtained from an injection of 1 cc. of d-desoxyephedrine immediately after the electric shock treatment. Addiction to the drug is prevented by the administration of small doses given to patients who are unaware of its administration.

Wiener medizinische Wochenschrift, Vienna

93: 523-548 (Sept. 25) 1943. **Partial Index**

*Problem of Nephritis, with Special Reference to War Nephritis. W. Pilgerstorfer.—p. 523.
Clinical Experiences with Chemotherapy of Gonorrhea. W. Volavsek.—p. 533.
Importance of Quantitative and Qualitative Examination of Semen in Diagnosis of Sterility. K. Páli.—p. 535.

War Nephritis.—Pilgerstorfer's experience during the winter campaign in Russia proved that the occurrence of war nephritis depends on a severe and prolonged exposure of the trunk to cold. The term "traumatic cold" is suggested to contrast common mild colds with severe colds which play a decisive part in the etiology of war nephritis different from that of "common" nephritis following acute tonsillitis. According to Eppinger's concept, war nephritis may be considered as a serous inflammation rather than a severe toxic infection. It may be due to pathologic permeability of the capillaries, which may be responsible for extravasation of plasma through the capillary walls into the interstitial tissues and for the effusion in the serous cavities of the body. Vollhard's concept of vasoconstriction due to severe cold should not be considered to be opposed to Eppinger's theory, since the susceptibility of the organism to serous inflammation may be due to the primary vascular spasm. Reports from the literature are quoted which prove that the term war nephritis is not fully appropriate, since the same clinical picture with the predominant symptom of severe edema and with the occasional absence of kidney involvement may occur in civil life as well. A new term, "cold dropsy," is therefore suggested.

Book Notices

Medical Education in the United States Before the Civil War. By William Frederick Norwood, Associate Professor of the History of Medicine and Associate Dean in the School of Medicine, College of Medical Evangelists, Los Angeles. Foreword by Henry E. Sigerist. Cloth. Price, $6. Pp. 487. Philadelphia: University of Pennsylvania Press; London: Oxford University Press, 1944.

Here is a true historical survey of medical education as it was in the United States before the Civil War. It is in no sense of the word a story of early American achievement but rather a well documented account of what happened in the pioneer period. The approach to the subject is geographic, the medical schools of each section being given consideration individually. The final section of the book is entitled "Evolution of the American System of Medical Education." This too concerns only the early period. The account emphasizes the evils done by proprietorship in medical education and the early tendency toward recognizing the necessity for university affiliation. It is fine to have a historian conclude this approach with the following paragraph:

> The most significant event in the latter part of the period was the establishment of the American Medical Association in 1847. Conceived by its founders as an instrument of reform, the Association charted a course for the elevation of medical education. Although the immediate response was limited, the movement so instituted eventually gathered sufficient inspiration and momentum to bring about, several decades later, a fulfilment of the idealism conceived by its founders.

Health Instruction Yearbook 1944. Compiled by Oliver E. Byrd, Ed.D., Associate Professor of Hygiene and Director, Division of Health Education, School of Health, Stanford University. Foreword by C. Morley Sellery, M.D., President, American School Health Association. Cloth. Price, $3. Pp. 354. Stanford University, California: Stanford University Press; London: Oxford University Press, 1944.

This second Health Instruction Yearbook follows the same lines as its predecessor. The two books are announced as the beginning of a continuing project by which it is hoped to gather between two covers each year the most important public health events for that year. The second edition, as might be expected, shows a better selection and gives a more comprehensive picture than did the first edition. Confusion still exists, as pointed out by this reviewer in his review of the 1943 Yearbook a year ago, in the dating of these yearbooks. The 1943 Yearbook was to all intents and purposes a 1942 summary, since it appeared before the end of 1943 and was, in fact, received for review on October 29 of that year. The 1944 edition was received late in September. Allowing necessary time for compilation and manufacture, the so-called 1944 Yearbook can hardly cover more than a half of the current year. In fact, the latest reference in the bibliography is July 1944. This in no sense of the word makes it a 1944 yearbook. This is a defect which will always be confusing and which will be more difficult to correct as subsequent editions increase the number of erroneously dated books.

The idea of such a reference book is valuable. It is being edited with good judgment. Already the two volumes constitute valuable reference books. It is too bad if the editor and the publishers persist in illogical dating when it has twice been called to their attention.

Case Studies in the Psychopathology of Crime: A Reference Source for Research in Criminal Material. By Ben Karpman, M.D., Senior Medical Officer and Psychotherapist, St. Elizabeths Hospital, Washington, D. C. Volume Two: Cases 6-9. Fabrikold. Price, $16. Pp. 738. Washington, D. C.: Medical Science Press, 1944.

This is the second volume in the series of "Case Studies in the Psychopathology of Crime" developed by Dr. Ben Karpman from St. Elizabeths Hospital in Washington. Here are pictures of juvenile delinquents who became criminals. The volume deals with the psychologic aspects of social maladjustment. Four cases are carefully analyzed: One, a habitual criminal, last confined for robbery of the mails but whose life included sex crimes, drug addiction and many periods in prison. The second was a "white slaver" who forced his wife into prostitution. The third, a man twice faced with punishment in the electric chair for rape of minors, and the last, a desperado who robbed mail trains and escaped three times after convictions. The analysis of these cases leads to much important knowledge for the prevention of crime.

Facio-Maxillary Injuries. By Kenneth W. Starr, O.B.E., M.B., M.S., Lieutenant-Colonel, A.A.M.C., and A. J. Arnott, B.D.S., D.D.Sc., F.A.C.D., Major, A.A.D.C., No. 1 Plastic Unit, attached 113th Aust. Gen. Hosp. [Reprinted from The Dental Journal of Australia, November 1943-March 1944.] Fabrikold. Pp. 69, with 80 illustrations. Glebe, Sydney,

This book comprises a joint report of the authors to the Australian Dental Association on a cross section of some 500 cases admitted to their service as a plastic unit attached to the 113th Australian General Hospital. It is reprinted from five issues of the *Dental Journal of Australia* appearing during 1943-1944. The authors stress the fact that "results in the difficult problems of faciomaxillary work may only be obtained by a highly specialized team working in unity and discharging complementary functions" and that "no single individual can hope to obtain the results which accrue from the management of these cases by a specialized organization." This is an obvious fact to the experienced plastic surgeon and is completely substantiated by case illustrations. The text is clear and concise and is presented in a somewhat telegraphic style. It is profusely illustrated with excellent photographs and drawings. Fifty-three of the sixty-nine pages are devoted to reconstructive surgery and the remainder to x-ray technic, anesthesia and relevant statistics.

The plastic section is divided into three parts dealing with fractures of the mandible, fractures of other facial bones and miscellaneous conditions. These sections present methods of management which have been frequently described and generally practiced, with a few notable exceptions. The authors' application of Mowlem's chip bone graft technic to ununited fractures, to large bone losses following the removal of tumors and cysts and, particularly, to losses of the mandible is a distinct contribution. The chipped cancellous bone, in the latter case, has been implanted with repeated success at the time of repair of the soft lining and covering tissues. The several advantages of this conception of replacement and its technical application are immediately apparent. The third section, dealing with miscellaneous problems, presents some interesting and helpful ideas in the management of injuries to the eye socket.

One cannot agree with the authors' attitude toward the management of section or trauma to the facial nerve resulting in loss of function. "A long period of months" should not elapse before deciding on direct suture, grafting or neuroanastomosis in any case in which the reaction of degeneration is complete and a sufficient portion of the distal end of the nerve remains for repair. The art of plastic surgery is largely an individual matter. This small manual contributes definitely to the development of this art.

Civilization and Disease. By Henry E. Sigerist, M.D., D.Litt., LL.D., William H. Welch Professor of the History of Medicine in the Johns Hopkins University, Baltimore. Cloth. Price, $3.75. Pp. 255, with 52 illustrations. Ithaca, New York: Cornell University Press, 1943.

This book is based on a series of six lectures delivered by its author at Cornell University in November and December 1940. It is essentially an introduction to social medicine beginning with civilization as a factor in the genesis of disease, tracing the various technics by which society has fought disease and concluding with chapters on disease in literature, art and music. Dr. Sigerist's approach to the accomplishments of medicine is one which constantly urges more and more improvement. "We must never say that health conditions are good," he says, "but must rather ask ourselves constantly whether they are as good as they could be." He points out that every society still carries an enormous burden of unnecessary illness. He recognizes that poverty remains the chief cause of disease and that it is a factor which is beyond the immediate control of medicine. He urges, finally, a system of health services that reaches everybody, healthy and sick, rich and poor. "We must break down the artificial barriers between preventive and curative medicine," he says. Medicine, he feels, should be considered a social science and merely as one link in a chain of social welfare institutions that every civilized country must develop. He feels that the civilized society of tomorrow will have for every family a family doctor and also a family health center. "The physician will become a public servant—scientist, social worker and educator—and medicine will increasingly shift the emphasis from disease to health."

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FALLING HAIR

To the Editor:—What are the possible causes of falling hair in women in the early forties, aside from syphilis? Could hypodermic administration of vitamin B_1 for the treatment of neuritis cause this? M.D., Missouri.

ANSWER.—The causes of the commoner forms of diffuse alopecia affecting large portions of the scalp are toxic alopecia, hereditary alopecia and seborrheic conditions. Toxic alopecia, defluvium capillorum, may follow the ingestion or inunction of thallium acetate, the hair loss appearing in from nine to fourteen days. It may occur secondary to pregnancy or to febrile disease such as typhoid, scarlatina and influenza, the loss of hair beginning only a month or more after the termination of the cause. Hereditary alopecia is nearly always combined with seborrheic conditions, so that a differential diagnosis is difficult in cases in which alopecia is known to be familial.

The toxic effects of thiamine hydrochloride have been reviewed by Eisenstadt (Hypersensitivity to Thiamine Hydrochloride, *Minnesota Med.* **25**:861 [Nov.] 1942) and by Leitner (Untoward Effects of Vitamin B_1, *Lancet* **2**:474 [Oct. 16] 1943). Except for 3 cases of herpes zoster reported by Sternberg in 1938, all have been allergic effects. Reports of alopecia due to thiamine have not been found.

FOUNDRY WORK DOES NOT AFFECT EYES

To the Editor:—What effect does the pouring of hot iron or any hot metal in a foundry have on the eyes over a period of years? Is there any time limit that one should stay on such a job?

Stephen Fairbanks, M.D., Albion, Mich.

ANSWER.—There is no effect on the eyes from the "heat of pouring hot iron or any hot metal in a foundry" even over a period of years. Foundry work is intermittent through the day; and in a recent court case in Chicago, in which the amounts of infra-red and ultraviolet light were actually measured in a foundry, they were found to be so infinitesimal, and of such short duration, that no pathologic effect could be attributed to them at all. The only clearcut pathologic effect on human beings that has ever been reported is that of glass blowers' cataract on the continent. Such injuries have never been reported in this country, and in Europe they implied constant exposure through long hours daily over a matter of eighteen to twenty years. There is no comparable industrial operation to this in this country, and no risk is taken by an employee working with hot metal in a foundry.

RICKETS OF YOUNG CHILD AND CORRECTIVE SURGERY

To the Editor:—A girl aged 18 months is suffering from moderate rickets. A few months ago a diagnosis of rickets was made elsewhere and therapy was started with doses of vitamin D only twice the minimum daily requirement. X-ray examination shows that the rickets has improved but not healed. She has now all the characteristics of active rickets of considerable duration. The chief complaint of the parents relates to the fact that the child is considerably bow legged. It is obvious that the child will need much larger doses of vitamin D to arrest her rickets. Adequate therapy has been started. The parents have been seeking advice from several physicians regarding the best care of the deformity of the child's legs, and they have received as many opinions as they have consulted physicians. An orthopedic surgeon suggested surgical intervention, a second orthopedic specialist advised the application of casts, a third physician, a pediatrician, felt that both surgery and application of casts would be unsatisfactory and felt that nothing could be done to correct the condition. I should appreciate advice. Would complete control of the active rickets in a child of 18 months result in the straightening of the legs to the point where a satisfactory cosmetic result may be obtained? M.D., California.

ANSWER.—Orthopedic surgeons would undoubtedly not all agree with regard to the treatment of bowing of the legs of a child 18 months of age. Orthopedic treatment planned for correction of this deformity should not be undertaken until the rickets is definitely healed. Plaster casts are not advised. Correction by means of plaster casts can rarely be achieved. While wearing the casts all muscular activity is greatly retarded in the extremities and atrophy of bones, muscles and other tissues, which have already been seriously affected by the nutritional deficiency, will be greatly accelerated. The pediatrician referred to in the query was perhaps unnecessarily pessimistic. Bowing of the legs can definitely be corrected by a surgeon who is adequately trained in orthopedic principles. When the rickets has been definitely arrested and bone density is again approximately normal, bilateral osteotomies at a level which would have to be determined by study of the individual patient will make it possible to restore alinement even though the bowing may be severe. In addition to the improvement obtained by surgery, some spontaneous correction may be anticipated through the growth of the child after the rickets has healed.

VARIATIONS IN RESPONSE TO SEROLOGIC TESTS FOR SYPHILIS

To the Editor:—In December 1942 a patient had a spontaneous abortion at two and a half months; her blood Wassermann and Kahn reactions were negative. When her mother six months later was diagnosed as having dementia paralytica the patient again had a negative blood Wassermann reaction and her spinal fluid Wassermann reaction also was negative. She became pregnant in June 1943 and had a negative blood Wassermann reaction. Blood was taken from the cord at delivery and was negative. Her husband was drafted and was not sent to a syphilis treatment center. In July 1944 she appeared asking for another blood test. The laboratory reported a doubtful positive Wassermann reaction, so more blood was taken and sent to several laboratories. The results were, first test, Kolmer 1 plus, Eagle 3 plus, Hinton 4 plus; second test, Kahn negative, Wassermann negative; third test, Wassermann negative, Kline exclusion and Kline diagnostic each 4 plus, and the fourth test, Wassermann doubtful 1 plus, Eagle 3 plus, Hinton 4 plus and Kahn 2 plus. Does this patient have syphilis? If not, what do these various reports mean? If she does, should or should she not be treated? M.D., Ohio.

ANSWER.—No conclusion whatever can be drawn from these serologic results other than that the patient has a small quantity of reagin or reagin-like substance in her blood. The evidence presented all suggests that the patient did not have syphilis prior to July 1944. It is perhaps important to know why the patient wanted her blood retested at that time: did she think she had been exposed to syphilis meanwhile?

Has she recently had any of the common conditions known to produce biologic false positive serologic tests? A method of study of such cases as this is outlined in Moore, J. E.; Eagle, Harry, and Mohr, C. F.: Biologic False Positive Serologic Tests for Syphilis, THE JOURNAL, Nov. 9, 1940, page 1602.

Certainly on the basis of this evidence a diagnosis of syphilis cannot be made, and treatment should not now be administered. Prolonged serologic follow-up by a quantitative technic is indicated.

WOOD DUSTS

To the Editor:—Are there any industrial diseases from inhaling fine wood dust? If so, is there any mask or filter that may be worn over the nose or mouth? L. Edward Giovine, M.D., Woodside, N. Y.

ANSWER.—It is doubtful whether significant quantities of wood dust can be inhaled into the depths of the lungs because the particle size is too great and, because being easily wetted, they are retained in the nose and throat. However, certain kinds of wood dust are highly irritating to the skin and upper respiratory tract, and some persons may become sensitized so that they react violently to contact with such dusts.

The U. S. Bureau of Mines approves respirators for various kinds of atmospheric contaminants. Among those listed for protection against wood dusts are the Mine Safety Appliance Company's Comfo Respirator number 8393, Willson Respirators numbers 300, 400 and 400F and Pulmorsan Respirator number M-15. For more specific information the Bureau of Mines in Washington should be consulted.

GLYCERIN IN OPHTHALMOLOGY

To the Editor:—In the Grand Rapids *Herald* I noticed that Dr. H. N. Bundesen in his health column advises that "a solution of tincture of iodine in glycerin" be used in the eye in some cases following removal of a foreign body. Is the use of glycerin in the eye generally accepted as a sound procedure? My own opinion has been otherwise.

H. V. Hendricks, M.D., Kalkaska, Mich.

ANSWER.—The use of glycerin in ophthalmology had quite a vogue among the ophthalmologists of the preceding generation, but today glycerin is scarcely ever used. Iodides in glycerin have been advocated by Weeks to retard the progress of incipient cataract. Harmon used 15 per cent glycerin as a solvent to prevent excessive burning when 1 per cent silver nitrate was applied to the conjunctiva. But as a routine measure glycerin is no longer in use in ophthalmology except as a solvent in McNally's formula for use in tear gas burns.